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Tree Farm Licence 39

Issued to Weyerhaeuser Company Ltd.

Rationale for Allowable Annual Cut (AAC) Determination

Effective November 21, 2001

Ken Baker
Deputy Chief Forester

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Objective of this Document

This document is intended to provide an accounting of the factors I have considered and the rationale I have employed in making my determination, under Section 8 of the *Forest Act*, of the allowable annual cut (AAC) for Tree Farm Licence (TFL) 39. This document also identifies where I believe new or better information is needed for incorporation in future determinations.

Description of the TFL

TFL 39, held by Weyerhaeuser Company Ltd. ('the licensee'), is comprised of seven separate blocks located on Vancouver Island, the Sunshine Coast, the Mid Coast, and the Queen Charlotte Islands. These blocks fall within five separate British Columbia Forest Service (BCFS) forest districts within the Vancouver Forest Region. TFL 39 is the largest TFL in the province, with a total area assumed in the timber supply analysis of 801 393 hectares. Sixty-eight percent of this area is considered productive forest land. Major tree species located throughout the TFL include western hemlock, western redcedar and yellow cypress. Balsam is located on all blocks except Block 6. Spruce is common on the northern Blocks 6 and 7 and Douglas-fir is found on the southern Blocks 1 and 2.

Following is a brief description of the seven blocks comprising TFL 39.

Block 1 is 186 979 hectares in size, located on the Sunshine Coast, and administered by the BCFS Sunshine Coast Forest District office in the community of Powell River. The block lies in mountainous topography and has relatively high rainfall. As a result, the area has a very diverse climate and ecology. The block contributes 23 percent of the TFL's gross area and 19 percent of the TFL's landbase considered available for timber harvesting. Harvesting in this area dates back to the 1890s.

Block 2 is 203 065 hectares in size, located northwest of Campbell River on Vancouver Island and within the Campbell River Forest District. The communities of Campbell River, Sayward and Kelsey Bay are either in or situated close to Block 2. The block has varied terrain, ranging from rugged mountains to marshy lowlands, and its forests are highly productive. The block contributes 25 percent of the gross TFL area, and 32 percent of the timber harvesting land base. Timber harvesting in the southern part of Block 2 began in about 1910, and in the northern part, in the Tsitika Valley, harvesting began in the 1960s.

Blocks 3 and 4, totalling 67 288 hectares, are administered together and are located within the Port McNeill Forest District. Block 3 is scattered across several small islands and peninsulas between Vancouver Island and the mainland. Block 4 is located on Vancouver Island, and stretches south from Port McNeill to Port Hardy. The area has varied topography, which ranges from rolling terrain and flat valley bottoms to rugged mountains and numerous inlets. The two blocks contribute 11 percent of the TFL's timber harvesting land base. Harvesting in Block 3 began in the 1920s and most of the older stands were harvested before the block became part of TFL 39. Harvesting in Block 4 began in the 1930s and 1940s.

Block 5 is comprised of 47 411 hectares located on the mainland between Knight and Bute Inlets, and is administered from the Campbell River Forest District. No major communities exist in or near Block 5 and harvesting operations are camp-based. The terrain is varied, ranging from rugged mountains to marshy lowlands. Block 5 contributes approximately 2 percent of the TFL's

total timber harvesting land base. Small scale harvesting operations started in this area in the 1940s.

Block 6 is 240 311 hectares in size and is located in the Queen Charlotte Islands, across Hecate Strait from Prince Rupert, and is administered by the Queen Charlotte Forest District. Most of Block 6 is located on Graham Island, the northernmost of the two major islands, with smaller portions of the block located on Louise Island and Moresby Island. The communities associated with Block 6 are Sandspit, Queen Charlotte City, Port Clements/Tlell, Masset and Skidegate. Block 6 contributes about 32 percent to the total TFL 39 timber harvesting land base. Harvesting in Block 6 began around the 1920s.

Block 7 comprises 56 339 hectares on the middle coast of the mainland in the Mid-Coast Forest District, along Fitz Hugh Sound. No major communities exist in or near the block, and harvesting operations are camp-based. The terrain is varied, ranging from rugged mountains to marshy lowlands. The block contributes approximately 4 percent of the timber harvesting land base of the TFL. Very small volumes of timber were harvested by hand-loggers before 1987, when large-scale harvesting development began.

History of the AAC

TFL 39 was originally issued in October, 1961 to MacMillan, Bloedel and Powell River Limited, with an initial AAC under Management Plan No. 1 of 1 243 000 cubic metres.

Between 1961 and 1989, the AAC varied between approximately 2.1 and 3.5 million cubic metres. It was adjusted eight times to reflect, among other factors, additions to the land base, higher utilization standards, increased yield estimates for regenerated stands, reductions in rotation ages, and the amalgamation with former TFL 7 in 1987.

In 1989 with the approval of Management Plan No. 6, the AAC for TFL 39 was determined to be 3 818 000 cubic metres. The chief forester determined an AAC of 3 686 000 cubic metres for 1993 and 3 675 000 cubic metres for 1994. In 1996, the chief forester determined an AAC of 3 740 000 cubic metres.

New AAC determination

Effective November 21, 2001, the new AAC for TFL 39 will be 3 660 000 cubic metres, a reduction of 2.1 percent from the previous AAC. This AAC includes a partition of 125 000 cubic metres to the areas known as the 'Haida declared protected areas' on block 6.

This AAC will remain in effect until a new AAC is determined, which must take place within five years of this determination.

Information sources used in the AAC determination

Information considered in determining the AAC for TFL 39 include the following:

- *Statement of Management Objectives, Options and Procedures (SMOOP) for Management Plan (MP) No. 8,* Tree Farm Licence 39, accepted May 18, 2000;
- *Information Package*: *Tree Farm Licence 39*, Management Plan No. 8, Weyerhaeuser Company Ltd., accepted February 23, 2000, amended September 2000;

- Existing stand yield tables for TFL 39, accepted by BCFS Resources Inventory Branch, April 12, 2000;
- Managed stand yield tables and site index curves, accepted by BCFS Research Branch, April 6, 2001;
- *Timber Supply Analysis: Tree Farm Licence 39*, Management Plan No. 8, Weyerhaeuser Company Ltd., accepted March 8, 2001;
- *Management Plan No. 8: TFL 39*, Weyerhaeuser Company Ltd., draft submitted November 7, 2000; proposed submitted April 2001, approved July 30, 2001;
- TFL 39, Twenty-Year Plan, Weyerhaeuser Company Ltd., accepted as follows: Sunshine Coast Forest District, December 19, 2000; Campbell River Forest District February 7, 2001; Port McNeill Forest District February 22, 2001; Queen Charlotte Forest District May 3, 2001; Mid Coast Forest District June 8, 2001;
- Summary of public input solicited by the licensee regarding the contents of Management Plan No. 8;
- *Landscape Unit Planning Guide*, Province of British Columbia (B.C.), March 1999;
- *Higher Level Plans: Policy and Procedures*, BCFS and Ministry of Environment, Lands and Parks (MELP), December 1996;
- Technical review and evaluation of current operating conditions on TFL 39 through comprehensive discussions with BCFS and MELP staff, notably at the AAC determination meeting held in Victoria on April 24 and 25, 2001;
- Vancouver Island Land Use Plan, Province of B.C., February 2000;
- Vancouver Island Land Use Plan Higher Level Plan Order, Province of B.C., December 2000;
- Central Coast Land and Coastal Resource Management Plan, Province of B.C., April 2000;
- Protocol Agreement on Land Use Planning, Interim Measures, Province of B.C., April 2000;
- Stillwater Pilot Project Regulation, B.C. Reg. 96/01, Deposited April 5, 2001 O.C. 427/01, effective April 5, 2001;
- Letter from the Minister of Forests to the Chief Forester, dated July 28, 1994, stating the Crown's economic and social objectives;
- Memorandum from the Minister of Forests to the Chief Forester, dated February 26, 1996, stating the Crown's economic and social objectives with regard to visual resources;
- *Forest Practices Code of British Columbia Act*, consolidated to March, 2001;
- *Forest Practices Code of British Columbia Act Regulations and Amendments*, current as of April 2001;
- *Forest Practices Code of British Columbia Guidebooks*, BCFS and MELP.

Role and limitations of the technical information used

Section 8 of the *Forest Act* requires the chief forester to consider biophysical as well as social and economic information in AAC determinations. A timber supply analysis, and the inventory and growth and yield data used as inputs to the analysis, typically form the major body of technical

information used in AAC determinations. Timber supply analyses and associated inventory information are concerned primarily with biophysical factors—such as the rate of timber growth and definition of the land base considered available for timber harvesting—and with management practices.

However, the analytical techniques used to assess timber supply are necessarily simplifications of the real world. There is uncertainty about many of the factors used as inputs to timber supply analysis due in part to variations in physical, biological and social conditions, although ongoing science-based improvements in the understanding of ecological dynamics will help reduce some of this uncertainty.

Furthermore, technical analytical methods such as computer models cannot incorporate all of the social, cultural and economic factors that are relevant when making forest management decisions. Therefore, technical information and analysis do not necessarily provide complete answers or solutions to forest management problems such as AAC determinations. The information does, however, provide valuable insight into potential impacts of different resource-use assumptions and actions, and thus forms an important component of the information required to be considered in AAC determinations.

In determining the AAC for TFL 39, I have considered known limitations of the technical information provided, and I am satisfied that the information provides a suitable basis for my determination.

Statutory framework

Section 8 of the *Forest Act* requires the chief forester to consider particular factors in determining AACs for timber supply areas (TSAs) and TFLs. Section 8 is reproduced in full as Appendix 1.

In accordance with Section 23(3) of the *Interpretation Act*, the deputy chief forester is expressly authorized to carry out the functions of the chief forester which include those required under Section 8 of the *Forest Act*.

The chief forester has expressed the importance of consistency of judgement in making AAC determinations. I also recognize the need for consistency of approach. I have observed the chief forester during a number of previous AAC determinations and am familiar with the guiding principles that the chief forester has employed in making AAC determinations. I find these principles to be reasonable and appropriate and I have adopted them as described below in making my AAC determination for TFL 39.

Guiding principles for AAC determinations

Rapid changes in social values and in our understanding and management of complex forest ecosystems mean that there is always some uncertainty in the information used in AAC determinations. When a large number of determinations are made for many forest management units over extended periods of time, administrative fairness requires a reasonable degree of consistency of approach in incorporating these changes and uncertainty. To make his approach in these matters explicit, the chief forester has compiled a set of guiding principles for AAC determinations. I have reviewed these principles and find them to be reasonable, and thus I have adopted and applied them as deputy chief forester in AAC determinations for TFLs. These principles are set out below. If in some specific circumstance it may be necessary to deviate from these principles, I will provide a detailed reasoning in the considerations that follow.

Two important ways of dealing with uncertainty are:

(i) minimizing risk, in respect of which in making AAC determinations, I consider the uncertainty associated with the information before me, and attempt to assess the various potential current and future social, economic and environmental risks associated with a range of possible AACs; and

(ii) redetermining AACs frequently, to ensure they incorporate current information and knowledge, a principle that has been recognized in the legislated requirement to redetermine AACs every five years. The adoption of this principle is central to many of the guiding principles that follow.

In considering the various factors that Section 8 of the *Forest Act* requires the chief forester to take into account in determining AACs, I attempt to reflect as closely as possible operability and forest management factors that are a reasonable extrapolation of current practices. It is not appropriate to base my decision on unsupported speculation with respect either to factors that could work to increase the timber supply—such as optimistic assumptions about harvesting in unconventional areas, or using unconventional technology, that are not substantiated by demonstrated performance—or to factors that could work to reduce the timber supply, such as integrated resource management objectives beyond those articulated in current planning guidelines or the *Forest Practices Code of British Columbia Act* and its associated regulations (the Forest Practices Code).

The *Forest Practices Code of British Columbia Regulations* were approved by the Lieutenant Governor in Council on April 12, 1995, and released to the public at that time. The *Forest Practices Code of British Columbia Act* was brought into force on June 15, 1995.

Although the implementation of the Forest Practices Code has been underway since the end of the transition period on June 15, 1997, the timber supply implications of some of its provisions, such as those for landscape-level biodiversity, still remain uncertain, particularly when considered in combination with other factors. In each AAC determination the chief forester takes this uncertainty into account to the extent possible in the context of the best available information. In making my determination for TFL 39, as deputy chief forester, I have followed the same approach.

As British Columbia progresses toward completion of strategic land-use plans, the eventual timber supply impacts associated with the land-use decisions resulting from the various planning processes—including the Commission on Resources and Environment (CORE) process for regional plans, the Protected Areas Strategy (PAS) and the Land and Resource Management Planning (LRMP) process—are often discussed in relation to current AAC determinations. Since the outcomes of these planning processes are subject to significant uncertainty before formal approval by government, it has been and continues to be the position of the chief forester that in determining AACs it would be inappropriate to attempt to speculate on the timber supply impacts that will eventually result from land-use decisions that have not yet been taken by government. I consider this approach to be reasonable and appropriate. Like the chief forester, I will therefore not take into account the possible impacts of existing or anticipated recommendations made by such planning processes, nor attempt to anticipate any action the government could take in response to such recommendations.

Moreover, even where government has made a formal land-use decision, it may not always be possible to fully analyze and account for the consequent timber supply impact in a current AAC determination. In many cases, government's land-use decision must be followed by a number of

detailed implementation decisions. For example, a land-use decision may require the establishment of resource management zones and resource management objectives and strategies for these zones. Until such implementation decisions are made it would be impossible to fully assess the overall impacts of the land-use decision. Nevertheless, the legislated requirement for five-year AAC reviews will ensure that future determinations address ongoing plan implementation decisions.

However, where specific protected areas have been designated by legislation or by order in council, these areas are no longer considered to be part of the timber harvesting land base or to contribute to the timber supply in AAC determinations.

For TFL 39, several land-use planning processes have provided clarification on some aspects of land and resource use, including decisions on protected areas.

Blocks 3, 5 and 7 of TFL 39 lie within the area now subject to the Central Coast Land and Resource Management Plan (CCLRMP) process. Agreement on phase one of the plan was reached in April 2001. The plan tentatively identifies a number of candidate protection areas, and recommends deferral of harvesting activity in other areas pending review by scientific panels. Government has recently endorsed the intent of the first phase agreement. When the planning process is complete, I anticipate that new management strategies will significantly clarify a number of land and resource use issues.

Blocks 2 and 4 of TFL 39 are within the area covered by the Vancouver Island Land Use Plan (VILUP). A summary plan combining the various decisions and reports for land use on Vancouver Island was announced by government in February 2000. Elements of the plan were made binding in the VILUP Higher Level Plan Order promulgated in December 2000. The provisions of the Order are being implemented, and are reflected in this determination.

Forest Renewal BC has funded a number of intensive silviculture activities that have the potential to affect timber supply, particularly in the long term. As with all components of an AAC determination, like the chief forester, I require sound evidence before accounting for the effects of intensive silviculture on possible timber supply. Nonetheless, I will consider information on the types and extent of planned and implemented practices as well as relevant scientific, empirical and analytical evidence on the likely magnitude and timing of any timber supply effects of intensive silviculture.

Some have suggested that, given the large uncertainties present with respect to much of the data in AAC determinations, any adjustments in AAC should wait until better data are available. I agree that some data are not complete, but this will always be true where information is constantly evolving and management issues are changing. Moreover, in the past, waiting for improved data created the extensive delays that resulted in the urgency to redetermine many outdated AACs between 1992 and 1996. In any case, the data and models available today are improved from those available in the past, and will undoubtedly provide for more reliable determinations.

Others have suggested that, in view of data uncertainties, the chief forester should immediately reduce some AACs in the interest of caution. However, any AAC determination made by the chief forester or myself must be the result of applying our individual judgement to the available information, taking any uncertainties into account. Given the large impacts that AAC determinations can have on communities, no responsible AAC determination can be made solely on the basis of a response to uncertainty. Nevertheless, in making my determination, I have made allowances for risks that arise because of uncertainty.

With respect to First Nations' issues, I am aware of the Crown's legal obligations resulting from recent court decisions including those in the Supreme Court of Canada. The AAC that I have determined should not in any way be construed as limiting those obligations under these decisions, and in this respect it should be noted that my determination does not prescribe a particular plan of harvesting activity within TFL 39. I am aware that the province has recently entered into a General Protocol Agreement on Land Use and Interim Measures with specific coastal First Nations.

With respect to future treaty decisions, as with other land-use decisions it would be inappropriate for me to attempt to speculate on the impacts on timber supply that will result from decisions that have not yet been taken by government.

Overall, in making this AAC determination, as the deputy chief forester, I am mindful of the mandate of the Ministry of Forests as set out in Section 4 of the *Ministry of Forests Act*, and of the chief forester's responsibilities under the *Forest Practices Code of British Columbia Act* and the *Forest Act*.

The role of the base case

In considering the factors required under Section 8 of the *Forest Act* to be addressed in AAC determinations, I am assisted by timber supply forecasts provided to me through the work of the Timber Supply Review program for TSAs and TFLs.

For each AAC determination for a TFL, a timber supply analysis is carried out using an information package including data and information from three categories—land base inventory, timber growth and yield, and management practices. Using this set of data and a computer model, a series of timber supply forecasts is produced, reflecting different starting harvest levels, rates of change over time, and potential trade-offs between short- and long-term harvest levels.

From this range of forecasts, one is chosen which attempts to avoid excessive changes from decade to decade and significant timber shortages in the future, while ensuring the long-term productivity of forest lands. This is known as the 'base case' forecast, and forms the basis for comparison when assessing the effects of uncertainty on timber supply.

Because it represents only one in a number of theoretical forecasts, and because it incorporates information about which there may be some uncertainty, the base case forecast for a TFL is not an AAC recommendation. Rather, it is one possible forecast of timber supply, whose validity—as with all the other forecasts provided—depends on the validity of the data and assumptions incorporated into the computer simulation used to generate it. In some cases, an AAC is determined that coincides with the base case starting point. In other cases, an AAC is determined which differs significantly from the modelled starting point.

Therefore, much of what follows in the considerations outlined below is an examination of the degree to which all the assumptions made in generating the base case forecast are realistic and current, and the degree to which its predictions of timber supply must be adjusted, if necessary, to more properly reflect the current situation.

These adjustments are made on the basis of informed judgement, using current available information about forest management, which may have changed since the original information package was assembled. Forest management data are particularly subject to change during

periods of legislative or regulatory change, such as the enactment of the Forest Practices Code, or during the implementation of new policies, procedures, guidelines or plans.

Thus it is important to remember, in reviewing the considerations which lead to the AAC determination, that while the timber supply analysis with which I am provided is integral to those considerations, the AAC determination itself is not a calculation but a synthesis of judgement and analysis in which numerous risks and uncertainties are weighed. Depending upon the outcome of these considerations, the AAC determined may or may not coincide with the base case forecast. Judgements that may be based in part on uncertain information are essentially qualitative in nature and, as such, are subject to an element of risk. Consequently, once an AAC has been determined, no additional precision or validation may be gained by attempting a computer analysis of the combined considerations to confirm the exact AAC determined.

Timber supply analysis

The timber supply analysis for TFL 39 was prepared by Weyerhaeuser using the Forest Stand Simulator (FSSIM) 3.0 timber supply model, and was reviewed by BCFS staff. Given that this model is used by the BCFS during its own timber supply analyses, and based on my staff's experience examining results from this model, I am satisfied that it is capable of providing a reasonable projection of timber supply for TFL 39.

The timber supply analysis incorporated assumptions based on the licensee's assessment of the best available information on current forest management, land base and timber yields for the TFL. These assumptions are discussed in the information package, and in the timber supply analysis documentation which form an integral component of the licensee's Management Plan Number (No.) 8.

In this rationale, I will discuss many of those analysis assumptions in the context of my considerations for this AAC determination. However, where my review of an assumption has concluded that I am satisfied it was appropriately modelled in the base case of the licensee's timber supply analysis, I will not discuss my considerations in detail in this document, other than to note my agreement with the approach that is already documented in the licensee's analysis report. Some factors for which the assumptions were appropriately modelled in the analysis may warrant discussion, however, for other reasons, such as a high level of public input, lack of clarity in the analysis report, or concerns resulting from the previous determination for TFL 39. I may choose to provide my consideration of such factors in this rationale.

The base case prepared by the licensee projected an initial harvest level of 3 660 000 cubic metres per year for the first five-year period (from 2001 onward), a level that is 2.1 percent lower than the current AAC. The harvest level then declines in average steps of 1.3 percent in each five-year period to a long-term level of 3 326 810 cubic metres per year, reached in the fifteenth decade. The long-term harvest level for the TFL is 9.1 percent lower than the initial harvest level.

As part of the timber supply analysis, the licensee provided separate harvest flow forecasts for Blocks 1, 2, 5, 6, 7, and for Blocks 3 and 4 combined, showing the level of contribution of the various supply blocks to the base case harvest projection. These harvest forecasts provide me with an assessment of the timber supply dynamics for the supply blocks comprising the TFL. This information has been an important part of the information considered in my determination, although I note that under section 8 of the *Forest Act*, the AAC I determine is for the entirety of TFL 39, not the individual blocks of which it is comprised.

I note that the initial contribution assumed in the analysis for most of the blocks of TFL 39 is similar to, if not the same as, the contribution recommended in the approval letter for Management Plan No. 7. For two of the blocks, however, the contribution is significantly different.

The following table illustrates the contribution specified for Management Plan No. 7 and the contributions assumed from each block in the base case harvest forecast of the timber supply analysis for Management Plan No. 8:

Block	Specified contribution (M.P. No. 7)	Base case contributions (M.P. No. 8)	Percentage difference
Block 1	445 000	550 000	+ 24.0 %
Block 2	1 335 000	1 335 000	0.0 %
Blocks 3 and 4	415 000	400 000	- 3.6 %
Block 5	100 000	95 000	- 5.0 %
Block 6	1 210 000	1 150 000	- 5.0 %
Block 7	195 000	130 000	- 33.0 %
Deciduous (not block-specific)	40 000	n/a*	100.0 %
TOTAL	**3 740 000**	**3 660 000**	**2.1%**

* Note that the base case assumed a volume contribution from deciduous stands, but the proportion was not tracked separately.

I have considered the assumed harvest contributions from each block of TFL 39. I note that, as is the case with each management unit in the province, the redetermination of the harvest level every five years provides the opportunity to review changes in information on growth and yield, land base and management practices such that they can be incorporated into the harvest projections. Subject to the discussion of my considerations of any uncertainty about any of these factors within this rationale, I accept the information used in the analysis as the best available information. As a result, even though the harvest projections for two blocks differ significantly from those illustrated in the previous timber supply analysis, I am satisfied that the licensee's harvest projections in the base case for this analysis for each block are reasonable and based on this best available information.

Following is a brief description of the volume contribution from each block as projected in the base case harvest forecast.

Block 1 contributed 550 000 cubic metres per year, or 15 percent, to the base case initial harvest level. The contribution gradually rose after 5 years until decade 15, when it stabilized at 668 316 cubic metres per year. In the long term, it was projected in the base case that 20 percent of the TFL's harvest will come from Block 1.

Block 2 provided an initial base case volume contribution of 1 335 000 cubic metres per year, or 36 percent of the initial level for the TFL, which was maintained for five years before beginning a series of declines of approximately 5 percent per decade to a long-term level of 1 079 207 cubic metres per year, reached after decade 4. The block contributed 33 percent of the long-term harvest level for the TFL.

Blocks 3 and 4 provided a steady volume contribution of 400 000 cubic metres per year to the base case harvest level throughout the forecast period. This contribution represented 11 percent of the base case initial harvest level, and 12 percent of the long-term harvest level for the TFL.

Block 5 contributed 95 000 cubic metres per year or 3 percent of the volume in the base case initial harvest level. After one decade the contribution declined in steps of approximately 5 percent per decade towards the long-term level of 72 397 cubic metres per year, reached by decade 5. Volume from Block 5 contributed 2 percent to the long-term harvest level for TFL 39.

Block 6 provided a contribution of 1 150 000 cubic metres per year, or 31 percent, to the base case initial harvest level. This contribution was maintained for five years before beginning a series of declines to the long-term volume contribution of 1 029 702 cubic metres per year, representing 31 percent of the long-term harvest level for TFL 39.

Block 7 contributed 130 000 cubic metres per year, or 4 percent of the initial harvest level attained in the base case. This contribution declined in steps of approximately 8 percent per decade to a long term contribution of 77 189 cubic metres per year or 2 percent of the long-term harvest level, reached in decade 5.

In Management Plan No. 8, the licensee proposed a AAC of 3 680 000 cubic metres. This proposed level is 20 000 cubic metres higher than the initial harvest level that was modelled in the base case. As part of the timber supply analysis underlying the AAC determination in 1996, the licensee estimated that Block 7 would contribute 195 000 cubic metres to the AAC. In the current base case analysis, the estimate has been reduced to 130 000 cubic metres. The licensee has proposed an AAC that is higher than the base case initial harvest level as a way of effecting a slower transition from the previous AAC to the long-term harvest level for that block. I will speak to this matter in *'Reasons for decision'*.

In the timber supply analysis, various sensitivity analyses were conducted to assess the potential implications for timber supply arising from uncertainty in data assumptions and estimates. These sensitivity analyses have also assisted me in considering the factors leading to my determination.

As discussed throughout this rationale, and in consideration of the items described above, I am satisfied that the base case provides an adequate basis from which I can assess the timber supply for TFL 39 in this determination.

Consideration of Factors as Required by Section 8 of the *Forest Act*

Section 8 (8)

In determining an allowable annual cut under subsection (1) the chief forester, despite anything to the contrary in an agreement listed in section 12, must consider

(a) the rate of timber production that may be sustained on the area, taking into account

(i) the composition of the forest and its expected rate of growth on the area,

Land base contributing to timber harvesting

- general comments

The total area of TFL 39, as estimated in the timber supply analysis using data from the licensee's inventory file, is 801 393 hectares. Of the total area, 68 percent or 548 241 hectares are productive forest land.

As part of the process used to define the timber harvesting land base (i.e., the land base estimated to be biologically and economically available for harvesting), a series of deductions was made from the productive forest land base. These deductions account for the factors that effectively reduce the suitability or availability of the productive forest area for harvest for ecological or economic reasons. For TFL 39, the deductions result in a timber harvesting land base of 369 970 hectares, or approximately 67 percent of the productive forest land.

The timber harvesting land base is smaller than that assumed at the time of the previous determination by 74 430 hectares or approximately 17 percent. Most of the change in size is as a result of reductions made in the 2001 analysis to account for riparian management areas, wildlife tree patches, variable retention patches and culturally modified trees.

I have considered all of the deductions applied in the derivation of the timber harvesting land base for TFL 39. In this document I will not discuss factors associated with the derivation of the timber harvesting land base for which I accept the assumptions as modelled in the base case. On TFL 39, these factors include the exclusions applied for non-forested areas, non-productive areas, and existing as well as future roads, trails and landings.

Where I believe an assumption in the base case is incorrect, or does not represent current practice, or where I believe a factor requires discussion, it is presented in the following sections of this rationale.

- protected area exclusions

Areas not managed as part of the TFL, such as parks and legally established protected areas, were excluded in the derivation of the timber harvesting land base. All protected areas established through order-in-council were excluded.

After the timber supply analysis had been completed, government established Inland Lake Park through order-in-council. This park encompasses 1424 hectares of the timber harvesting land base assumed for Block 1 of TFL 39.

The licensee conducted a sensitivity analysis to assess the impact to timber supply of excluding the Inland Park area. The sensitivity analysis results indicated that the base case harvest level for

the TFL is unaffected for the first 50 years of the forecast period, after which it decreases by 1.2 percent.

I have considered the information regarding the exclusion of parks and protected areas in the derivation of the timber harvesting land base of the TFL. Given government's recent decision on the Inland Lake Park area, I am satisfied that it is appropriate to account for the exclusion of this area from the timber harvesting land base of the TFL. As a result, I will take into account the timber supply impact of excluding these additional hectares, and I will discuss this further under *'Reasons for decision'*.

- economic and physical operability

The portions of a TFL which are not physically accessible for harvesting, or which are not expected to be feasible to harvest economically, are typically categorized as inoperable and are excluded when deriving a timber harvesting land base for modelling purposes.

In TFL 39, the licensee considers timber to be inoperable only if it is located in areas where harvesting is precluded because of safety concerns, or where a significant proportion of the volume could not be recovered. The licensee indicates in its management plan that it assumes all of the mature timber on the TFL that is physically safe to fall and remove without unacceptable environmental damage will be economically available for harvest over the long term.

However, to provide an assessment of operability on TFL 39 that is more consistent with that typically applied during timber supply reviews, the licensee prepared a stand classification for the TFL using economic criteria. Stands were divided into categories of uneconomic, marginally economic or economic according to the following criteria:

- volume per hectare, which differed by species, anticipated log-grade mix, and harvesting system;
- the costs associated with the applicable forwarding method (conventional or non-conventional); and
- the expected values from the various stand types (by species and grade).

In 1999, the licensee completed a review and update of operability for TFL 39, and provided BCFS staff with revised operability mapping based on both physical and economic criteria. That mapping has been accepted by all forest districts.

In the base case, approximately 16 000 hectares of productive forest land were excluded from the timber harvesting land base because they were assumed to be inoperable. These stands were judged to be physically inaccessible and/or uneconomic.

With one exception, district staff indicate that the assumptions used in the base case were an appropriate reflection of current practice and operational considerations. Mid-Coast Forest District staff are concerned about the contribution assumed from the marginally economic stands (2430 hectares) in Block 7. Staff indicate that very few of such stands are currently economic to harvest. In particular, they question the economic viability of harvesting the majority of stands prescribed to be harvested using helicopters, which comprise 65 percent of the stands classed as marginally economic. Staff question the lack of criteria for flight distance, and as well the appropriateness of the TFL minimum volume criterion applied to Block 7, given the higher costs of operations in the Mid Coast relative to the rest of the TFL. Staff indicate that the licensee has

not demonstrated significant harvest performance in these marginally economic stand types in Block 7, and that very limited harvest in these areas is projected in the twenty-year plan.

The licensee provided a sensitivity analysis to illustrate the timber supply impacts if the marginally economic stands in Block 7 were excluded from the timber harvesting land base. In this sensitivity analysis, the harvest level was the same as that shown in the base case for that block for the first fifty years of the analysis horizon, after which it declined to a long-term level approximately 17 percent below that projected in the base case for that block.

The Heiltsuk First Nation in its public input noted that very little economically marginal timber in Block 7 is currently being harvested. They express concern that this will result in primarily marginal timber remaining in the long term, thus jeopardizing the long term operability of the block.

I have considered the information regarding the operability for TFL 39, and discussed this information with district staff. For all of the blocks of TFL 39 with the exception of Block 7, I am satisfied that the operability information used in the analysis represents the best available information and is suitable for use in this determination.

For Block 7, I am mindful of the concerns around the marginally economic stands, which comprise 18 percent of the timber harvesting land base and in which the licensee has demonstrated little harvesting performance to date. I am aware that the licensee asserts that these stands will be economically feasible to harvest in the long term, and I note that changes in the future around timber pricing and markets may lead to increased opportunities in areas not previously thought to be economic. The size of the economically operable land base is always difficult to determine for many administrative units, and in particular for those in the mountainous terrain prevalent in coastal B.C.

I am mindful that the sensitivity analysis results indicate that mid- to long-term timber supply for Block 7 is significantly impacted in the future if the marginal stands prove to be unharvestable. Furthermore, in addition to the uncertainty around the operability of stands assumed to contribute to timber supply for Block 7, there are other concerns around harvesting in Block 7, such as those discussed under *Central Coast Land and Resource Management Plan,* which act to compound the uncertainty for this area. In this determination, I accept that there is a risk to longer term timber supply as a result of the possibility that many of the stands currently described as marginally economic may not actually be harvestable. I will discuss my considerations of this factor, and the interactions with the other issues mentioned above, further under *'Reasons for decision'*.

I note that in my approval of Management Plan No. 8, I have instructed the licensee to better analyze the economic operability for Block 7 over the term of the plan.

- environmentally sensitive areas/terrain stability

An environmentally sensitive area (ESA) is an area identified through an inventory as sensitive to disturbance and/or with significant value for soils, regeneration, wildlife, water or recreation resources. ESA classifications of E1 (highly sensitive) or E2 (moderately sensitive) are used to exclude areas from the timber harvesting land base where more specific or detailed information is not available about a particular forest resource.

In the analysis, the licensee used ESA data to exclude areas sensitive to regeneration difficulties, as well as subject to avalanche hazard. I have reviewed these exclusions and am satisfied that they were appropriate, and I will not discuss them further in this rationale.

Areas of potential terrain instability were mapped and partially excluded from the timber harvesting land base in the analysis. The licensee used ESA data in combination with terrain stability data to derive suitable land base reductions to account for sensitive or unstable soils. Where terrain stability information was available, the information was used to evaluate unstable soils; where it was not available, Es1 (areas highly sensitive to soil disturbance) and Es2 (moderately sensitive to soils disturbance) data were used. Separate percentage factors for exclusion were developed for each block and for areas identified as Es1, Es2, or class IV, V or VI terrain.

The Vancouver forest regional geomorphologist reviewed the terrain mapping and the reductions used in the analysis to account for areas with unstable soils, and assessed them to be satisfactory for all blocks.

Having reviewed the information about unstable soils on TFL 39, and the assumptions used in the analysis to account for terrain stability concerns, I accept that the best available information was used in the base case. As a result, I make no adjustments on account of this factor.

- deciduous forest types

Deciduous forest types are dominated by broad-leaved deciduous species. The net area of deciduous forest on TFL 39 after exclusions for sensitive sites and non-timber resources is approximately 5400 hectares, comprised primarily of red alder-leading stands.

The licensee notes that some deciduous stands are found in unharvestable areas, such as in riparian reserve zones, and others are not merchantable. To account for this, the licensee excluded 2924 hectares, or approximately 50 percent of deciduous-leading stands, in the derivation of the timber harvesting land base. The residual area occupied by deciduous-leading stands, totalling about 2550 hectares following other exclusions, was assumed to contribute to timber supply. Approximately half of this area is located on Block 1, with the remainder located on Blocks 2 and 6.

Given that less than one percent of the timber harvesting land base is covered by deciduous-leading stands, the stands were aggregated with hemlock-leading stands in the analysis, and volumes were projected using the Variable Density Yield Prediction (VDYP) curves for hemlock. No specific harvest priority was placed on deciduous-leading stands in the timber supply analysis.

District staff indicate that the inclusion of deciduous-leading stands in the timber harvesting land base reasonably reflects current practice, given the licensee's harvesting history in the stands. Both district and licensee staff expect that deciduous utilization will increase on TFL 39.

In his 1996 AAC determination, the chief forester included an allowance of 40 000 cubic metres per year for harvesting of deciduous stands. The licensee indicates in its management plan that it harvested approximately 250 hectares of deciduous stands on Block 1 in the six-year period from 1993 through 1998. From 1996 through 1999, the licensee harvested an average of 27 000 cubic metres per year of deciduous volume on Block 1.

Public input from the village of Port Clements expressed concern that alder was not being utilized on Block 6. Additional input requested access to red alder for the purposes of furniture manufacture. The licensee responded by making note of its commitment in Management Plan No. 8 to develop a policy and guidelines for management of alder by the end of 2001.

I am aware that the licensee has considerable experience with the harvesting and utilization of hardwoods in the United States, and that the licensee's Northwest Hardwoods division has recently purchased Coast Mountain Hardwoods in British Columbia, thereby acquiring a mill that specializes in the processing of red alder. I expect that harvesting and utilization of red alder from TFL 39 will continue to occur at least at the level it has historically, and perhaps even increase in the near future. Although the licensee has harvested somewhat less than the previously partitioned amount, it has demonstrated consistent performance in the stands to date, and has committed in its management plan to develop a red alder strategy. Despite the current market value of red alder being relatively low, I expect that utilization will increase as prices and markets improve. I also note that the red alder growing sites assumed to contribute to timber supply on TFL 39 are located in biogeoclimatic ecosystem subzones which research has indicated are very suitable for growing that species. I am also aware that many red alder stands on TFL 39 are already 60 years of age, which suggests that these stands are at an optimal age for harvesting.

For the reasons noted above, and in particular noting that the deciduous-leading stands make up less than one percent of the timber harvesting land base, I am satisfied that risks to timber supply posed by the inclusion of these stands in the timber harvesting land base are minimal.

I am aware of the licensee's request that a partition to alder-leading stands not be made as part of this AAC determination. I note that BCFS regional and district staff are content to not have a partition specified, and I will speak to this under Partitioned AAC.

Overall, I am satisfied that the assumptions regarding the inclusion of deciduous stands in the timber harvesting land base were reasonable, and reflective of current operational practices.

Existing forest inventory

I have considered the information regarding the forest inventory information used in the timber supply analysis. I am satisfied that it represents the best available information and forms an acceptable basis for this determination.

I have also considered the information regarding the volume estimates for stands older than 130 years of age, and I am satisfied that acceptable procedures were used in the analysis. I am satisfied that the yields projected for those stands are reflective of current conditions on TFL 39, and are appropriate for use in this determination.

Expected rate of growth

- site productivity estimates

Inventory data include estimates of site productivity for each forest stand, expressed in terms of a site index. The site index is based on the stand's height as a function of its age. The productivity of a site largely determines how quickly trees grow. This in turn affects the time seedlings will take to reach green-up conditions, the volume of timber that can be produced, and the ages at which a stand will satisfy mature forest cover requirements and reach a merchantable size.

In general in British Columbia, site indices determined from younger stands (i.e., less than 31 years old), and older stands (i.e., over 140 years old) may not accurately reflect potential site productivity. In young stands, growth often depends as much on recent weather, stocking density and competition from other vegetation, as it does on site quality. In old stands, which have not been subject to management of stocking density, the trees used to measure site productivity may have grown under intense competition or may have been damaged, and therefore may not reflect

the true growing potential of the site. This has been verified in several areas of the province where studies—such as the old-growth site index (OGSI) project—suggest that actual site indices may be higher than those indicated by existing provincial inventory data from old-growth forests. Studies include those known as 'paired-plot'—where plot samples from an old-growth stand and the adjacent second-growth stand are compared—and a provincial veteran tree study. It has been consistently concluded from such studies that site productivity has generally been underestimated; managed forest stands tend to grow faster than projected by inventory-based site index estimates from old-growth stands.

The licensee believes the inventory file for TFL 39 underestimated site productivity for second-growth forests. To address this concern, the licensee developed a biophysical method of estimating site index, which relates a known series of second-growth site indices to biophysical site attributes such as species, biogeoclimatic ecosystem variant, and geographic location. These relationships were used to assign site index based on specific biophysical site relationships to stands where the current site index assignment is more uncertain. Using the data, site indices were calculated for all stands except the majority of the older second-growth stands (those between 33 and 130 years of age). For these stands, which comprise about 120 000 hectares, cruise-measured heights and ages were available and were used to calculate site index.

In order to assess the validity of the estimates derived using the biophysical methodology, the licensee compared the estimates derived using biophysical data to site index estimates from recently cruised second growth. The results showed that the average site indices derived using the biophysical method compared well with the measured site indices. The largest variance was found on Block 6, where the average estimated site index was 31.4 metres, compared to the average cruised value of 27.9 metres. The uncertainty around the assigned site indices for Block 6 is greater due to the lower amount of available biophysical data for that block.

The licensee used the site indices derived using the biophysical methodology in the base case of the timber supply analysis. This site index estimation procedure was reviewed and accepted by BCFS Research Branch staff.

The Heiltsuk First Nation in its public input noted that the biophysical site index is not supported by empirical evidence on Block 7, and that they believe there is still some uncertainty about the future volumes from regenerated stands. They did not provide specific data to support the statement.

Overall, Research Branch staff indicate that the site indices obtained using the biophysical decision tree methodology provide a better estimate of site productivity for second-growth stands than the inventory information, due to the uncertainty inherent in inventory information based on measurements from old-growth stands. Staff did not have any specific concerns about the data for Block 7. However, staff had some concerns about the variability in site index for stands on Block 6, and the relatively small sample size from that block used in the decision tree methodology. From reviewing the data, Research Branch staff estimate that site index for Block 6 is likely to be about 6 percent lower than predicted by the decision tree and assumed in the analysis.

BCFS staff reviewed the implications for timber supply of an overestimation in site index for the managed stands on Block 6. Staff estimate that if the site indices of managed stands on Block 6 are indeed overestimated by 6 percent, timber supply in the longer term for that block may be reduced by up to 8 percent. Sensitivity analysis in which the impacts of a 10 percent

overestimation in managed stand yields for the entire TFL was tested showed that overall, the timber supply of the TFL is not substantially affected for the first 30 years.

Research Branch staff indicate that the collection of data allowing for the use of Site Index Biogeoclimatic Ecosystem Mapping (SIBEC) to estimate site index should provide a better assessment of site productivity for TFL 39. The licensee indicates that it plans to complete terrestrial ecosystem mapping (TEM) over the term of Management Plan No. 8 for TFL 39. Completion of this mapping will provide data to allow for the use of SIBEC methods of site index estimation.

I have considered the information regarding the site productivity assumptions in the analysis for TFL 39. In general, I accept that the methodology used to estimate site indices for the base case was reasonable, and provided acceptable estimates for managed stands for all blocks, with the exception of Block 6. For Block 6, I accept that there is a risk to long-term timber supply as a result of a possible overestimation in site productivity for managed stands, and I will discuss this further under *'Reasons for decision'*.

I am mindful of the dependence of the harvest levels on the productivity estimates for second-growth forests. I believe it critical to continue to assess the reliability of the site productivity estimates, and refine the estimates as necessary over time. I expect the licensee will meet its management plan commitment to collect TEM data in order to refine the site productivity information for the next timber supply analysis.

- volume estimates for regenerating stands

The licensee used its proprietary growth and yield model Y-XENO to estimate volumes for all existing stands 130 years of age or less, and all stands regenerated in the future.

The licensee has cruise data for the majority of stands between 33 and 130 years of age on the TFL, and used these data in the analysis. Volume and basal area estimates were used to correlate the cruise information to yield projections across a range of establishment densities.

According to the licensee, its intensive forestry program was initiated in 1962. For stands established after this date (less than 33 years of age at the start of the forecast period), as well as for all stands regenerated in the future, the licensee used criteria of biogeoclimatic ecosystem variant, supply block, stewardship zone and leading species to assign each stand to the appropriate analysis unit for estimating yields.

The licensee also applied operational adjustment factors specific to Y-XENO to the yields for managed stands in each block to account for volumes lost as a result of small non-productive openings, insects, disease, decay, waste and breakage.

The managed stand yield tables generated by Y-XENO and used in the analysis were reviewed and accepted by Research Branch staff.

The licensee announced its Forest Project in 1998, as is discussed in greater detail later in this rationale. The licensee began to implement variable retention in 1998, and expects to fully implement the management regime by 2003.

In the timber supply analysis, the licensee incorporated specific assumptions to approximate the impact on stand yields expected to result from the use of this management regime. The licensee reduced yield estimates to account for the anticipated effects of competition from variable retention leave patches, such as shading and edge effects. Yield reductions of 30 percent in the

old-growth zone, 11 percent in the habitat zone, and 3 percent in the timber zone were applied to stands regenerating from the start of the analysis horizon (1995) and beyond. The cumulative timber supply impact of these yield reductions was 5.4 percent over the entire TFL.

I am aware that in the timber supply analysis, the full implementation of variable retention was assumed from the beginning of the analysis horizon, or 1995. However, the licensee does not expect to fully implement variable retention until 2003. The impact of variable retention on stand yields was therefore overestimated for the first 9 years of the analysis horizon. No specific sensitivity analysis was conducted to assess the timber supply implications of having assumed earlier implementation of variable retention than will occur operationally.

I have considered the information regarding the analysis assumptions for regenerating stands, and I have discussed the information with BCFS staff. I accept that the volume contribution of these stands to mid- to long-term timber supply has been slightly underestimated as a result of the assumptions around the timing of the implementation of variable retention. I will take this into account in this determination. My considerations will be discussed further under *'Reasons for decision'*.

- use of select seed

The Forest Practices Code requires the use of the best genetic quality (seed and vegetative material) source available for regeneration. Select seed produced from seed orchards is the product of B.C.'s forest gene resource management program, which uses traditional tree breeding techniques to select naturally-occurring, well-adapted, healthy and vigorous trees.

Select seed from seed orchards produces trees that grow faster than those from natural stand seed. As a result, a stand composed of such trees has a greater volume at the same age than a natural stand with the same species composition. Current expectations are that the volume differences will begin to decrease beyond a certain stand age.

In the timber supply analysis, the yield projections for all future planted stands included an assumed second generation genetic gain of 13 percent for Douglas-fir and 6.5 percent for hemlock. Research Branch staff reviewed the assumptions, and indicate that the methodology used for estimating genetic gain was acceptable. However, staff note that the benefits of the second generation gain from select seed should not have been assumed until the year 2006, as this seed will not be available from seed orchards until that time. In the analysis, second generation select seed was assumed to be available beginning in 1995.

On TFL 39, the assumptions about the use of select seed affect the volumes estimated from managed stands as well as the age at which stands meet minimum harvestable age criteria. Green-up heights were not adjusted in the analysis to account for the use of select seed.

Having considered the information about the assumptions around the availability of second generation genetic gain from the use of select seed, I believe that there has been a slight overestimation of mid- and long-term timber supply as a result of assuming availability of the gain earlier than will be realized operationally. I will discuss this further under *'Reasons for decision'*.

- minimum harvestable ages

In timber supply analysis, estimates are made of the earliest age at which a forest stand has reached a harvestable condition or has met minimum merchantability criteria. The assumptions largely affect when second-growth stands will be available for harvest in the model. In practice,

many forest stands will be harvested at older ages than the age at which they reach minimum merchantability, due to economic considerations and constraints on harvesting which may arise from managing for other forest values such as visual quality, wildlife habitat and water quality.

The licensee indicates in its management plan that a review of second-growth harvest operations found harvesting of stands with volumes of 350 cubic metres per hectare or greater to be generally economic. Based on this analysis, the licensee applied a single minimum stand volume criterion of 350 cubic metres per hectare to determine minimum harvestable ages for the stands on TFL 39. District staff confirm that the assumptions are consistent with the licensee's past harvesting.

For Douglas-fir stands, the derived minimum harvestable ages ranged from between 43 and 56 years for high productivity sites to between 150 and 201 years for poor productivity sites. For hemlock stands, minimum harvestable ages ranged between 40 and 56 years on high productivity sites to between 75 and 173 years on poorer sites.

At the beginning of the harvest projection, the average age at which stands were harvested was close to 300 years, due to the greater volume contribution from existing old-growth stands. In the long term, the average age at which stands were harvested in the model ranged between 65 and 85 years. The licensee notes in its management plan that it used a maximum volume harvest objective in the base case which caused stands to be harvested in the model closer to the age at which the culmination of mean annual increment for the stand was reached.

In the long term, the average volume per hectare for stands at time of harvest in the base case was 710 cubic metres.

The licensee conducted sensitivity analysis to assess the implications to timber supply if minimum harvestable ages were 10 years greater than assumed in the base case. Results indicate that timber supply would be reduced by 3.5 percent in the second decade as compared to the base case. In the sensitivity analysis, timber supply continued to be somewhat reduced relative to the base case until decade 5, when the harvest level returned to a level very close to that in the base case. The results indicate timber supply is sensitive to increased minimum harvestable ages.

In public comment on the draft management plan, concern was expressed about the strategy of harvesting trees at young ages. In particular, the opinion was expressed that red alder is not mature at 40 years of age. In response, I note that the BCFS and others are conducting research into the silvics and ecology of red alder, including the suitability of this species for timber production. Research results indicate that red alder on good growing sites (such as those found on TFL 39) can indeed be considered mature at 40 years of age.

Public opinion was also expressed that 60 years of age is too short a rotation for fir and cedar. The Value Added Subcommittee of the Community Advisory Group for Block 1 expressed concern that young harvest ages sacrifice too much in wood quality, and that the quality of the trees harvested at young ages would be inadequate to meet the requirements of secondary manufacturers. The opinion was expressed that there is a limited amount of old-growth Douglas-fir timber remaining on Block 1, and that there is an urgent need to address wood quality concerns if second-growth stands do not provide the wood quality attributes required for secondary manufacturing.

Having considered this input, and the response made by the licensee to the subcommittee, I make the following observations. Of more importance than the minimum age at which a stand could possibly be harvested is the actual age at which stands are harvested in the model in order to support the base case harvest forecast. The average harvested age in the long term was between

65 and 85 years, but as noted by the licensee in response to the input, this average reflects a mix of stands harvested close to minimum harvestable ages and stands held for longer rotations to meet specific management objectives. I also note that the licensee commits in its response to the public input to work with the advisory group in the development of objectives for wood quality, and to ensure that the analysis for MP No. 9 more explicitly addresses any management considerations that arise as a result. I acknowledge this commitment made by the licensee, and expect it will be met.

Having considered the information regarding the minimum harvestable age assumptions applied in the analysis, I accept that the methodology for determining the ages was reasonable. I am aware that minimum harvestable age assumptions are always somewhat uncertain due to the difficulties associated with projecting future practices and market demand. Overall, however, I accept that the age assumptions in the analysis were reasonable, and I make no adjustments on this account.

(ii) the expected time that it will take the forest to become re-established on the area following denudation,

Expected time for forest to be re-established following harvest

I have reviewed the information regarding impediments to prompt regeneration, not-satisfactorily-restocked areas and the other regeneration assumptions in the analysis for TFL 39. I am satisfied that these assumptions in the base case, apart from those related to regeneration delay as discussed below, reflect the best available information and current practices on TFL 39, and are suitable for use in this determination.

- regeneration delay

Regeneration delay is the period between harvesting and the time at which an area becomes occupied by a specified minimum number of acceptable, well-spaced seedlings. In timber supply analysis, regeneration delay is used to determine the starting point of tree growth for the yield curves used to project stand volumes over time.

The licensee assumed that stands on TFL 39 will be regenerated through planting as well as natural regeneration. The assumed regeneration delay in the analysis accounted for the delays associated with the use of both of these regeneration methods.

Operationally, harvested sites are restocked within two years of harvest with trees that are one year of age. To reflect this, in the timber supply analysis stands were mistakenly assumed to be one year old at the time when the stands they replace were harvested.

Following the analysis it was discovered that the input to the modelling was in error because it is the age of regeneration stock that should be input to FSSIM, rather than the period of regeneration delay, as operational practices are reflected by assuming that one year must elapse following harvest, before stands germinate. The licensee subsequently corrected the modelling error and assessed the timber supply impacts of modifying this assumption through sensitivity analysis. Results indicate that the modelled timber supply was unaffected other than a 0.8 percent reduction in decade four, and a 1.9 percent reduction in decade five.

I have reviewed the information regarding the regeneration delay assumptions, and I accept that mid- to long-term timber supply has been very slightly overestimated as a result of this modelling

error. I will take this into account in this determination, and I will discuss my considerations further under *'Reasons for decision'*.

(iii) silvicultural treatments to be applied to the area,

Silvicultural treatments to be applied

I have reviewed the information and assumptions regarding incremental silviculture activities on TFL 39, and I am satisfied that current practice was appropriately reflected in the base case. I accept the information as the best available, and that it is suitable for use in this determination.

- silvicultural systems

The licensee announced its Forest Project in 1998 and committed at that time to phase out all use of clearcutting silvicultural systems by 2003. The licensee expects to implement variable retention fully across the TFL by that time.

The term 'variable retention' is used by the licensee to describe an overall approach to harvesting. The licensee indicates in its management plan that variable retention can be implemented with a wide range of harvesting systems and can be combined with shelterwood or selection silvicultural systems to meet forest regeneration objectives. The Operational Planning Regulation recognizes variable retention as a silvicultural system designed to retain individual trees or groups of trees to maintain structural diversity over the area of the cutblock for at least one rotation, and leave more than half the total area of the cutblock within one tree height from the base of a tree or group of trees, whether or not the tree or group of trees is inside the cutblock.

The licensee's Forest Project is discussed in greater detail later in this rationale, and the assumptions applied in the analysis to account for the effects of shading and edge on stand yields as a result of variable retention are discussed under *volume estimates for regenerating stands*.

I have reviewed the information about the silvicultural systems assumptions made in the analysis, and I have discussed the information with BCFS staff. As noted under *volume estimates for regenerating stands*, I am accounting in this determination for the implications for timber supply of assuming variable retention was fully implemented at the start of the analysis timeframe. With the exception of this accounting, I am satisfied that the analysis assumptions reasonably reflect current practices on TFL 39, and that no further adjustments are required on this account in this determination.

(iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area,

Timber harvesting

- utilization standards and compliance

Utilization standards define the species, dimensions and quality of trees that must be harvested and removed from an area during harvesting operations. In timber supply analysis, the utilization specification defines the minimum merchantable tree size and the portion of a tree that contributes volume to the harvest level.

In the base case, the utilization standards assumed for all species in stands less than 130 years of age were a minimum 12.5-centimetre diameter at breast height (dbh) with volume calculated from a 30-centimetre maximum stump height to a 10-centimetre minimum top diameter inside bark. For stands greater than 130 years of age, a minimum 22.5-centimetre dbh, with a 30-centimetre maximum stump height and 15-centimetre minimum top diameter inside bark were assumed.

District staff note that the utilization standards assumed in the analysis differ slightly for older stands from the standards applied operationally. However, BCFS staff have reviewed the differences and indicate that there are no implications for timber supply. Provincially, a review of this issue has shown that such small differences in assumed utilization standards have a negligible impact on timber supply.

Having reviewed the information about utilization standards, I am satisfied that there are no implications for this determination resulting from the small discrepancy between standards assumed in the base case and those applied in current practice. As a result, I make no adjustments for this determination.

- decay, waste and breakage

I have reviewed the information regarding the decay, waste and breakage in existing stands on TFL 39, and I am satisfied that the best available information was used in the base case. I accept the assumptions as suitable for this determination.

(v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production,

Integrated resource management objectives

The Ministry of Forests is required under the *Ministry of Forests Act* to manage, protect and conserve the forest and range resources of the Crown and to plan the use of these resources so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are co-ordinated and integrated. Accordingly, the extent to which integrated resource management (IRM) objectives for various forest resources and values affect timber supply must be considered in AAC determinations.

- Forest Project

In June of 1998, the licensee announced its new forest management strategy known as the Forest Project. The strategy applies to all BC coastal Crown land management units to which the licensee is assigned harvesting rights. Key components of the project include the phase-out of clearcutting over a five-year period and its replacement with variable retention, as well as increased conservation of old-growth forests and wildlife habitat. The licensee indicates that the strategy also includes goals for third-party certification to provide assurance that it is meeting specific standards, and an adaptive management and monitoring system to ensure a process of continual improvement.

Under the terms of reference for the Forest Project, TFL 39 is divided into three stewardship zones: old-growth, habitat, and timber. The licensee describes in its management plan the different management objectives for each zone, and the varying application of silvicultural systems and levels of forest retention. The licensee used a draft classification of the landbase of

the TFL into stewardship zones for the timber supply analysis. The licensee notes in its management plan that the boundaries for these zones may change as a result of higher level plans, other regional planning initiatives and further discussions with BCFS or MELP staff (the latter of which are now in the Ministries of Sustainable Resource Management or of Water, Land and Air Protection).

Under the project, the old-growth zone includes areas of high biodiversity values and/or environmental sensitivity, high cultural values, and high recreational values. The licensee's primary management objective for this zone is the conservation of old-growth values. Within the old-growth zone, the licensee expects to retain trees on 70 percent of the timber harvesting land base.

The habitat stewardship zone includes areas that have high biodiversity values and a moderate amount of old growth, and the licensee's primary objective for this zone is wildlife conservation. Within the habitat stewardship zone, the licensee expects to retain trees on 15 percent of the timber harvesting land base.

The timber zone includes both private and public land designated as having low biodiversity emphasis. The licensee's stated primary management objective in this zone is commercial timber production, built on a solid conservation base. In the timber zone, the expected final retention within the timber harvesting land base is 10 percent.

BCFS staff have reviewed the assumptions used in the analysis to reflect the management regime under the licensee's Forest Project, including the assumptions regarding regenerated stand yields (as discussed under *volume estimates for regenerating stands*) and levels of retention in each of the stewardship zones. Staff confirm that base case assumptions and modelling satisfactorily reflect the expected implementation of the management regime.

Public input was received which questioned the levels of retention assumed in the timber zone, indicating that the implementation of variable retention was leading to levels of retention in excess of 10 percent in order to ensure wind resistant retention areas, specifically on Block 6. The Heiltsuk First Nation also questioned the modelling assumptions for variable retention, believing that the volume reductions needed to account for actual levels of retention and growth impacts were underestimated.

The licensee responds by confirming that the amount of retention in variable retention harvest blocks will be monitored over the first few years of implementation, and that assumptions will be revised as necessary to reflect operational experience.

The licensee also notes in Management Plan No. 8 that it expects the stewardship zones and variable retention under the Forest Project to fit well with the goals for landscape unit planning.

I am aware that the licensee is currently implementing the Forest Project, and as with other land management regimes, aspects of management under the Forest Project will become clearer as implementation progresses. I note that some aspects of the management under the Forest Project are not clearly specified in the Management Plan, such as the area to which the retention for each zone is applied (landscape unit, block, etc.). The licensee notes that assessment of and revision to the boundaries of the stewardship zones are still occurring. I have accepted the licensee's commitments in its management plan as a reasonable approach for the term of the plan, and I expect that any changes to the management strategies under the Forest Project resulting from experience gained as the project is implemented will be reflected in the next management plan.

I have considered the information about the management regime for TFL 39 arising from the licensee's Forest Project, and the management objectives so described. From review of the timber supply analysis assumptions, I am satisfied that the timber supply analysis reasonably well reflected the expected management under the terms of the project at the time of the analysis. Since then, as discussed under *Stillwater Pilot Project Regulation*, government has deposited a regulation which has led to some adjustments in the zones for Block 1, and to an increased level of retention in old-growth stewardship zones. As also discussed under that section, I am taking this into account in this determination. For the remainder of the blocks, I am satisfied that current management has been appropriately reflected in the base case, and I make no adjustments for this determination.

However, I request that the licensee report annually on the level of retention in each zone of each block of TFL 39, in order to ensure that the next timber supply analysis accurately reflects the field experience.

- *community watersheds*

The Forest Practices Code provides a definition and management considerations for community watersheds. Five designated community watersheds overlap or partly overlap the timber harvesting land base of TFL 39, in Blocks 1, 2 and 6.

In the timber supply analysis, a forest cover constraint was applied to the Crown productive forested area in designated community watersheds to account for management considerations within the areas. Stands on at least 90 percent of the Crown productive forested area were required to be 10 years of age or greater at all times. A total of 4929 hectares of productive forest, or 3344 hectares of timber harvesting land base were constrained in the analysis because of community watershed management considerations.

Application of the forest cover constraint to the total Crown land area, rather than to the Crown productive forested area, would in fact more appropriately reflect the intent of the *Community Watershed Guidebook* and the *Interior Watershed Assessment Procedure Guidebook*. As a result, the application of the constraint in the analysis was likely more restrictive than the constraint required by current policy.

District staff indicate that although the Whittal area was a designated community watershed at the time of the analysis, it has since ceased to be so. As a result, in the analysis 583 hectares of timber harvesting land base was assumed to be under community watershed constraints that in fact is not constrained in operational practice.

I have considered the base case assumptions for the areas managed as community watersheds on TFL 39. I am aware that slightly more area was modelled under the constraints than current practice, and as well that the forest cover constraint should have been applied to the total Crown land area, rather than to the Crown productive forested area, to best reflect the intent of the *Community Watershed Guidebook*. However, I note that the amount of area in community watersheds on TFL 39 is less than one percent of the total TFL area and affects less than one percent of the total timber harvesting land base. Therefore modelling a slightly more constraining restriction is not a concern for this determination. Similarly, the additional area constrained in the analysis as a result of assuming the Whittal watershed is a community watershed, amounts to less than 0.2 percent of the timber harvesting land base, and I am satisfied that such a small discrepancy is not significant.

Overall, I am satisfied that the management considerations for community watersheds were reasonably well reflected in the base case, and I make no adjustments on this account for this determination.

- coastal watershed assessments

Under the Forest Practices Code, coastal watershed assessments are conducted prior to operations in community watersheds, and also may be requested by a district manager and a designated environment official for watersheds that are determined to have significant sensitivity, significant downstream fisheries values, licensed domestic water users, or other situations where the district manager deems it to be necessary.

Coastal watershed assessments have been conducted for several watersheds in TFL 39—My, Whittal, Adam, Elk, Tsitika, Benson and Waukwass—and these have recovery plans in place that include road and stream rehabilitation as well as short-term harvest restrictions.

To reflect current practice in the timber supply analysis, these areas were subjected to watershed-specific rate of cut constraints until 2010. These rate of cut constraints were expressed in terms of a maximum allowable area that could be harvested each year. A total of 14 502 hectares of timber harvesting land base on TFL 39 lies in these watersheds.

District staff indicate that coastal watershed assessments have also been conducted on the Jeffered and Lang community watersheds, parts of which are located in TFL 39. These two watersheds were subjected to the forest cover constraint discussed under *community watersheds*, but otherwise were not modelled with maximum rates of cut applied. However, only a very small proportion of each of these two watersheds is located within TFL 39, and an even smaller proportion falls within the timber harvesting land base. As a result, the explicit modelling of an additional rate of cut constraint would have negligible implications for timber supply. Operationally the level of disturbance from harvesting in the two watersheds would never exceed the maximum allowable rate of cut.

I have considered the information about watersheds on TFL 39 for which coastal watershed assessments are required. Although I am aware that not all of the watersheds to which these assessments apply were reflected in the base case, I am satisfied from reviewing the information that there are no implications for timber supply resulting from the discrepancy between the assumptions applied and current practice. Therefore I make no adjustments for this determination.

- recreation resources

Recreation is an important use of the forests on TFL 39. The licensee has made several recreation-related commitments in its management plan, including to co-operate with local tour operators in the provision of access, to develop strategies for recreation sites and trails, to maintain recreation sites (subject to funding), and to provide recreation maps to the public. The licensee has also committed to managing and protecting cave and karst resources on the TFL.

The licensee updated the recreation inventory for the TFL in March 2000. The recreation inventory for all blocks has been accepted by district staff with the exception of Block 1. The inventory for Block 1 is currently being updated to ensure it reflects current management considerations.

The licensee used data from the recreation inventory in the timber supply analysis to exclude areas of recreation value, such as cave entrances and recreation sites. Proportions of areas were

excluded at the level at which they were expected to not be available for contribution to timber supply. District staff indicate that the exclusions applied in the base case reasonably reflected considerations for recreation management guiding current practices on the TFL.

Having reviewed the information regarding recreation resources, I am satisfied that the base case assumptions appropriately reflect current management for recreation on TFL 39. I therefore accept the information for use in this determination.

I note that in its management plan, the licensee commits to update the recreation inventory for Block 1 of TFL 39 over the term of the plan. I expect the licensee will meet this commitment, and look forward to the use of any new information that is collected for the next timber supply analysis.

- visually sensitive areas

Careful management of scenic areas along travel corridors and near recreational sites is an important IRM objective. Visual quality is important on many areas of TFL 39. The Island Highway on Vancouver Island passes through Blocks 2 and 4. Portions of Blocks 3, 4, 6 and 7, are visible from pleasure craft and cruise ship routes. Several canoe routes and recreation trails have viewscapes which include parts of TFL 39.

The Forest Practices Code enables the management of visual resources by providing for scenic areas to be identified and made known, and by providing for the establishment of visual quality objectives (VQOs). The district managers have made scenic areas known for all blocks of TFL 39. Visual quality objectives have been established for portions of Block 1, and recommended visual quality classes guide current practice on the rest of the TFL.

On TFL 39, approximately 1660 hectares or 0.4 percent of the total timber harvesting land base are classified as retention, 52 000 hectares or 14.1 percent of the timber harvesting land base are classified as partial retention, and 39 000 hectares or 10.5 percent are classified as modification. District staff have confirmed that the base case assumptions reflect the area currently managed for scenic values on the TFL.

To achieve VQOs, limits are placed on the amount of visible disturbance that is acceptable in visually sensitive areas. Guidelines to meet VQOs include setting a maximum percentage of a landform allowed to be in a disturbed state at any one time, and setting visually effective green-up (VEG) targets that must be achieved before additional harvesting is permitted. VEG refers to the stage at which a stand of forested timber is perceived by the public to be satisfactorily greened-up from a visual standpoint. To meet this requirement, the green-up height and associated age within visually sensitive areas might be different than the green-up height applied to non-visually sensitive areas. In the timber supply analysis, VEG was defined as the average age of a stand to meet a height of 5 metres for Blocks 1 to 5, and 6 metres for Blocks 6 and 7.

The licensee indicates that it employs good visual design principles on all blocks of TFL 39. In the timber supply analysis, the licensee modelled allowable disturbance within each visual quality zone at the maximum of the permitted ranges because it was assumed that good visual landscape design principles would be followed. District staff indicate that the licensee is practising good visual design techniques in visually sensitive areas, and indicate that the analysis assumptions reflect current practice.

The licensee notes that VEG heights were not adjusted in the analysis to reflect the faster growth expected from the use of select seed and the revised hemlock site indices. The licensee expects these two factors may result in an up-to-one-year reduction in the age at which VEG is reached.

However, the implementation of the Forest Project may mitigate the possible reduction in the age at which VEG is achieved. The licensee plans to investigate this consideration for the next timber supply analysis.

The CCLRMP has identified portions of Block 3 as being within a Special Resource Management (SMZ) visual quality zone. The SMZs identify high priority visual areas and were established specifically to address visual management issues related to forest development. The framework agreement for the CCLRMP outlines a process for developing visual quality objectives and appropriate management practices for the SMZ areas. This process is expected to be completed over the next 12 to 24 months. Some of the areas encompassed by the SMZs have previously been declared as scenic areas by district managers and have draft visual quality objectives. The management regimes recommended following the process may be applied to some extent to other areas within the area covered by the CCLRMP that are also considered to be visually sensitive.

The implications to forest development of the recommendations for managing visual quality within the SMZs are not yet known, and as a result the timber supply implications are not possible to determine. It is possible that the recommendations may lead to more restrictive management considerations for visual quality on Block 3 over time. However, it is also possible that through the implementation of the Forest Project, the achievement of stewardship zone retention objectives may to some extent meet requirements for visually sensitive areas. The licensee suggests in its management plan that implementation of the Forest Project will facilitate harvesting in visually sensitive areas through the use of variable retention.

Having reviewed the information about visually sensitive areas, I am satisfied that the assumptions applied in the base case are reasonable and reflective of current practices on TFL 39. As any changes to practices occur over time, they can be reflected in future timber supply analyses. For this determination, I accept that the best available information was used.

- cultural heritage resources

Cultural heritage resources generally include archaeological and traditional use sites. Archaeological sites contain physical evidence of past human activity, whereas traditional use sites may not necessarily contain historical physical evidence but may indicate current use by a First Nation. To help manage for unrecorded archaeological sites, archaeological overview mapping may be conducted to assign high, moderate or low ratings for archaeological potential within an area.

The licensee has committed in Management Plan No. 8 to properly manage sites of historic and cultural significance and to account for such sites in strategic analysis. The majority of cultural heritage resources identified to date on TFL 39 are culturally modified trees (CMTs). The licensee expects that retention of trees under the variable retention management regime, as well as in reserves to meet requirements for riparian habitat and stand level biodiversity will account for the forested area likely to be reserved for CMTs on the majority of the TFL. However, Block 6 has an extensive number of CMTs, and the licensee believes that the land exclusions for other resources would not adequately reflect the expected management for CMTs. As a result, an additional 3052 hectares were excluded in the derivation of the timber harvesting land base on Block 6 on this account.

With respect to Block 6, the licensee also notes in its management plan that it assisted the Council of the Haida Nation in the Queen Charlotte Islands with an inventory of ceremonial cedar in 1999,

in response to concerns raised by the Haida regarding a sustainable supply of western redcedar for ceremonial purposes.

The licensee did not apply any other land base exclusions in the analysis to account for archaeological sites or traditional use sites.

District staff have reviewed the analysis assumptions and indicate that they adequately reflect current practice and expected management. Staff indicate that on the majority of blocks, retention of CMTs can occur within existing reserves and areas excluded from the timber harvesting land base to manage for other forest resource values. However, due to the large number of CMTs on Block 6, staff indicate that the application of an additional exclusion is appropriate. Staff indicate that the exclusion applied in the analysis—2.5 percent of the timber harvesting land base in Block 6—is consistent with data from studies conducted in the adjacent Queen Charlotte TSA.

I note that the licensee commits in its management plan to review available inventories and operational information over the term of this management plan in order to update and refine where possible the accounting for cultural heritage resources. I expect the licensee will meet this commitment.

Having reviewed the information on the accounting for cultural heritage resources in the base case, I accept that the best available information was used, and that it is suitable for this determination.

- riparian habitat

Riparian habitats occur along streams and around lakes and wetlands. The Forest Practices Code requires the establishment of riparian reserve zones (RRZs) that exclude timber harvesting, and riparian management zones (RMZs) that restrict timber harvesting in order to protect riparian and aquatic habitats. For each stream, lake or wetland, the RRZ and RMZ make up the entire riparian management area. Stream riparian classes are described in the *Riparian Management Area Guidebook* and are determined based on presence of fish, occurrence in a community watershed and average channel width criteria. The stream class is used to estimate the area required to be retained in the RRZ and the area or volume to be retained in the RMZ. Similar criteria are used to classify lakes and wetlands.

In the base case, management practices in RRZs and RMZs were reflected by excluding area from the timber harvesting land base. The area of RRZs was estimated and entirely excluded in the derivation of the timber harvesting land base. For RMZs, the licensee assumed that 60 percent of the maximum allowable retention specified in the guidebook is retained in current practice, and an equivalent area was excluded in the base case.

District staff have reviewed the assumptions in the base case, and indicate that they reflect current approved operational practices. However, staff indicate that operational retention in RMZs may be somewhat less than modelled for some of the blocks of TFL 39.

MELP staff expressed concern about the retention assumed around lakes in the Gildersleve and Koeye watersheds for Block 7 in the Mid Coast. Although the exclusions applied in the base case do reflect current approved practices in the district, MELP staff indicated that new guidelines are currently under development that may increase the required levels of retention around these lakes. In the meantime, I make no adjustments for this determination. Any changes in guidelines which occur over the term of this management plan can be factored into a future analysis.

I have considered the information regarding riparian habitat, and am satisfied that the analysis assumptions reasonably reflect current management. However, given that there is some uncertainty around the actual levels of retention in RMZs, I request that the licensee better quantify the levels of retention over the term of this determination, so that any necessary adjustments in analysis assumptions can be incorporated into the next timber supply analysis.

- wildlife habitat

TFL 39 provides habitat for numerous wildlife species, including goats, grizzly bears, deer and elk. Habitat provisions for ungulates and for grizzly bears were addressed in the base case through the exclusion of environmentally sensitive areas (ESAs) for these species. I have reviewed how the management requirements for grizzly bear and ungulate habitats were accounted for in the analysis, and I am satisfied that the assumptions were appropriate and require no further adjustments for this determination.

For wildlife species considered to be at risk, the Conservation Data Centre of BC maintains forest district tracking lists. These lists name the species and plant associations considered to be at risk (e.g., endangered, threatened, vulnerable or sensitive) and which are known to occur, strongly expected to occur, or which have occurred in the past within a given forest district.

'Identified wildlife' refers to species at risk (red- and blue-listed) and to regionally significant species which may be impacted by forest management activities, and which may not be adequately protected by existing management strategies such as those for biodiversity, riparian management, ungulate winter range or through the application of other forest cover constraints. Species at risk as defined under the Forest Practices Code also include the species that are not considered at risk provincially but which have regional populations that may be threatened. The intent is to address the habitat needs of regionally significant wildlife early on, in order to lessen the chance that they will become listed as threatened or endangered provincially.

Volume I of the IWMS was released in February 1999 and details several species which occur or potentially occur within TFL 39 and which require future consideration when planning timber harvesting activities. These species include the following: tailed frog, marbled murrelet, northern goshawk (both mainland and Queen Charlotte variants), bull trout, keen's long-eared myotis, mountain goat and grizzly bear. Volume II, which has yet to be released, may identify additional species.

While grizzly bear are listed under the IWMS, provisions for management of their habitat on TFL 39 are separate from the implementation of IWMS, as discussed under ***grizzly bear habitat.***

In general, identified wildlife species will be managed through the establishment of wildlife habitat areas (WHAs) and implementation of general wildlife measures (GWMs), or through other management practices specified in higher level plans. Although mapping of identified wildlife habitat is in progress on TFL 39, no specific WHAs or management strategies for identified wildlife species have yet been established. As a result, no specific exclusions were applied in the base case.

Government has limited the impact of management for identified wildlife to a maximum of one percent of the short-term harvest level for the province. When WHAs are identified or established, and GWMs are implemented, the impacts on timber supply of management for identified wildlife will be more quantifiable. In addition, measures will be assessed over time to determine if they are sufficient to adequately protect the identified wildlife species. The identified wildlife strategy and associated timber supply impact thresholds may be changed after

such an evaluation, but I cannot speculate on the outcome of this process. In addition, I cannot speculate about decisions that may be made during future land and resource management planning processes with respect to identified wildlife. Any future changes to the required measures for identified wildlife species which result in impacts to timber supply, either under the IWMS or according to approved plans, will be incorporated into future determinations.

For this determination, it is not possible to specify the exact location or precise amount of habitat area that will be required within the timber harvesting land base to implement the IWMS. Given the commitment made by government discussed above, it has been appropriate in the majority of AAC determinations to account for an expected but not fully quantified impact on the timber supply. In the case of TFL 39, I note that the implementation of the licensee's Forest Project may accommodate part or all of the habitat needs of identified wildlife through the retention of suitable old-growth habitat. It is likely that the licensee will, to the extent possible, incorporate WHAs into its planned retention of old growth. However, I believe that it may not be possible for this to occur in every instance, particularly for species such as goshawk which require large contiguous patches of old-growth forest. In consideration of the information regarding identified wildlife, I believe that the establishment of wildlife habitat areas may act to reduce mid- to long-term timber supply by some amount, although likely by less than one percent given the considerations discussed above. I will discuss this further under *'Reasons for decision'*.

- *landscape-level biodiversity*

Achieving landscape-level biodiversity objectives involves maintaining forests with a variety of patch sizes, seral stages, and forest stand attributes and structures, across a variety of ecosystems and landscapes. A major consideration in managing for biodiversity at the landscape level is leaving sufficient and reasonably located patches of old-growth forests for species that are dependent on or are strongly associated with old-growth forests. Although some general forest management practices can broadly accommodate the needs of most ecosystems, more often a variety of practices is needed to represent the different natural disturbance patterns under which ecosystems have evolved.

The delineation and formal designation of 'landscape units' is a key component of a sub-regional biodiversity management strategy. A landscape unit is an area established by the district manager, generally up to 100 000 hectares in size, based on topographic or geographic features such as a watershed, or series of watersheds, to manage biodiversity and other forest resource values.

Landscape unit boundaries have not yet been established for the majority of TFL 39. Draft landscape unit boundaries and draft biodiversity emphasis options (BEOs) are available, and the draft boundaries were used in the base case.

A small portion of Block 1 falls within the Bunster Landscape Unit, now subject to a higher level plan Order under the Forest Practices Code. Landscape unit plan objectives and Old-growth Management Areas (which meet targets for old seral retention) have been set within this landscape unit under the plan.

The *Biodiversity Guidebook*, the *Landscape Unit Planning Guide* and *Higher Level Plans: Policy and Procedures* all provide policy and guidance on management for landscape-level biodiversity. The *Landscape Unit Planning Guide* provides guidance on which components of the full range of recommendations included in the *Biodiversity Guidebook* should be implemented to achieve a balance of forest management objectives. The *Landscape Unit Planning Guide* contains forest cover requirements for old seral forest that are to be applied at the biogeoclimatic variant

level within each landscape unit. The requirements are stated as a minimum percentage of the productive forest to be retained in stands above a specified age that varies by ecosystem type. The guide also allows the old-seral requirement to be phased in over time in landscape units with a lower biodiversity emphasis.

The 1996 Higher Level Plans: Policy and Procedures guide provides further policy guidance. It outlines three biodiversity emphasis options (BEOs)—lower, intermediate and higher—that may be employed when establishing biodiversity management objectives for a landscape unit. To achieve a balance between biodiversity and timber supply objectives, this guide recommends the application of a mix of BEOs in each subregional planning area. The proportions of a planning area subject to lower and intermediate biodiversity emphasis should range from 30 to 55 percent, with the average at approximately 45 percent of the area subject to lower, 45 percent to intermediate, and 10 percent to a higher BEO.

The policy generally followed for timber supply analyses where landscape units and BEOs have not been established is to model the distribution of BEOs using a weighted average forest cover requirement, and this approach was taken in the base case for TFL 39.

The licensee provided a sensitivity analysis in which the draft BEO assignments were applied. The results indicate that apart from a small timber supply reduction in decade 5 in Block 5, timber supply is not affected by application of the draft BEOs in comparison to application of the weighted average forest cover requirement used in the base case.

The licensee notes that it expects the implementation of the Forest Project to also provide for meeting landscape level biodiversity objectives. However, the capability of the old-growth zones and the use of variable retention in meeting the requirements for landscape level biodiversity is still under discussion between the licensee and agencies staff. As a result, the base case incorporated explicit modelling of landscape level biodiversity requirements.

For Block 1, in which the Bunster Landscape Unit Plan is subject to a higher level plan, Sunshine Coast district staff indicate that for the portion of the block affected, the plan objectives were appropriately reflected in the timber supply analysis.

The Vancouver Island Land Use Plan Higher Level Plan Order (VILUP Order) (discussed later in this document) has implications for landscape level biodiversity requirements on TFL 39. Blocks 2 and 4 are within the area covered by the Order, under which seral targets are set for specific resource management zones, and special management zones are delineated. The seral stage requirements assumed in the base case were consistent with those outlined in this order with the exception of those for two landscape units within Block 2, as discussed below.

Under the VILUP Order, the old seral objectives for the xm2 variant of the Coastal Western Hemlock (CWH) biogeoclimatic ecosystem zone in the Salmon and Sayward landscape units must be implemented immediately. In the base case, however, the licensee assumed that the full implementation of old-growth requirements would occur by the end of the third rotation.

BCFS staff have reviewed the implications for timber supply of modifying the assumption to properly reflect the VILUP Order. Retaining the full old seral requirement in the xm2 variant in the Salmon and Sayward Landscape units would lead to the retention of an additional area equivalent to just less than 1 percent of the timber harvesting land base in Block 2. BCFS staff are confident that the small amount of area involved, and the fact that some of the stands below 250 years of age may be available for harvest as a substitute for these old reserved stands, indicate the immediate application of this objective would have negligible influence on timber supply from the block.

I have reviewed the information regarding the assumptions applied in the base case to account for landscape level biodiversity. I expect that implementation of the Forest Project will provide greater clarity on the suitability of the regime for meeting biodiversity needs, and that any necessary refinements in the assumptions can be incorporated into a future analysis. As such, I accept that the majority of the assumptions for landscape level biodiversity applied in the base case are appropriate for this determination.

With respect to the portions of TFL 39 covered by the VILUP Order, I am satisfied from review of the information that the implications for timber supply of adjusting the landscape level biodiversity assumptions to reflect the Order are negligible. As a result, I do not make any adjustments in my determination on account of this factor.

- stand-level biodiversity

Stand level biodiversity management includes retaining reserves of mature timber, or wildlife tree patches (WTPs), within or adjacent to cutblocks to provide structural diversity and wildlife habitat.

Landscape unit planning is expected to be completed for all of TFL 39 within the next few years. As a result, the licensee used retention rates for WTPs consistent with table A3.1 in the *Landscape Unit Planning Guide*. It was assumed that 75 percent of WTP requirements will be met from outside the land base contributing to timber supply. The average WTP land base exclusion ranged from 1.0 percent for Block 7 to 3.6 percent for Block 3.

District staff have reviewed the exclusions applied in the analysis. They note that the licensee may be retaining more area to meet stand level biodiversity objectives than assumed in the timber supply analysis. However, it is possible that some or all of this variation may be offset by the variable retention practices the licensee is currently implementing, and which were accounted for in the base case assumptions. As well, WTPs retained in current cutblocks may be intended to provide for stand level biodiversity needs in adjacent unharvested areas once they are harvested, which would result in a lesser impact to the timber harvesting land base over time than implied by current operational rates of retention.

The licensee notes in its management plan that it has developed a monitoring program to assess the amount of reserve area retained to meet non-timber objectives, and expects to be able to use this information to confirm or adjust its assumptions over the term of the management plan.

I have considered the information about stand level biodiversity. I am satisfied that the assumptions for wildlife tree patch retention reasonably reflect operational practices on TFL 39, and that the licensee has reasonably well accounted for the expected management requirements in the base case. I look forward to any additional information which becomes available as a result of the licensee's monitoring program for incorporation into the next timber supply analysis.

(vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber,

Other information

I have reviewed the information about harvest rules, sequencing and harvest profile, and I am satisfied that the assumptions applied in the base case were reflective of current practice.

I further note that, as with all timber supply analyses, the application of assumptions in the analysis such as those around harvest sequencing, do not drive operational planning. In the context of AAC determinations, the timber supply analysis assumptions are meant to reflect current operational practices, and forest practitioners should not base on-the-ground operations on assumptions made in the analysis.

- twenty-year plan

The licensee prepared a twenty-year plan to provide an assessment of the operational feasibility of the proposed rate of harvest.

The twenty-year plan was accepted for all blocks, although staff in the Mid Coast Forest District had concerns about the original submission of the plan for Block 7. District staff indicate that following submission of the twenty-year plan, the licensee's staff reviewed the plan for Block 7 from an operational perspective and found that 24 percent of the projected blocks were not operationally feasible. As a result, the plan did not accurately indicate the feasibility of the proposed harvest. The licensee subsequently amended the plan to better illustrate the likely operational availability of the harvest by avoiding placing blocks in marginally economic areas.

Following the amendments, the plan was accepted by the Mid Coast Forest District.

As discussed under *economic and physical operability*, I am aware of the concerns around the operability of marginal areas and helicopter harvestable areas in the Mid Coast Forest District, and I will discuss my considerations of this further under *'Reasons for decision'*.

- First Nations considerations

The blocks of TFL 39 fall within the asserted traditional lands of several First Nations, including the following: Haida, Oweekeno, Heiltsuk, Nuxalk, Sliammon, Sechelt, Klahoose, Winalagalis Treaty Group, Hamatla Treaty Society, Gwawaineuk, Tsawataineuk, Kwiksutaineuk, Mamalilikulla, and Holmalco. The Haida, Oweekeno, Heiltsuk, Sliammon, Sechelt, Klahoose, Winalagalis, Hamatla and Homalco First Nations are engaged in the treaty process with the Province of British Columbia and the federal government.

The Haida, along with several other First Nations (the Gitga'at, Haisla, Heiltsuk, Kitasoo/Xaixais and Metlakatla Nations), signed the General Protocol Agreement on Land Use and Interim Measures with the provincial government in April 2001. The agreement outlines a land-use planning protocol to guide the development of a planning process for the area, and indicates that the Province will work with the First Nations to define principles and anticipate scope and outcomes of planning processes and negotiate forestry and tourism interim measures agreements.

Pursuant to the General Protocol, the Province and the Haida signed a Protocol on Interim Measures and Land Use Planning in April, 2001. The Haida have indicated a strong commitment to participate in a strategic land-use planning process for the Queen Charlotte Islands, and to negotiate a forestry interim measures agreement. Government has responded by indicating its intention to proceed toward a land-use planning process over the next 12 to 24 months. Discussions continue between staff in the Ministry of Sustainable Resource Management (former Land Use Coordination Office staff), the Haida Nation and the island communities to craft a suitable model for land-use planning on the Queen Charlotte Islands. Discussions on the forestry interim measures agreement are also continuing.

1) Haida declared protected areas

Since the early 1980's, fourteen areas on the Queen Charlotte Islands have been declared by the Council of the Haida Nation as "Haida declared protected areas". The Haida consider them to be significant because of cultural, spiritual and environmental values. Since being declared by the Haida, these areas have been subject to land-use uncertainty.

The "Haida declared protected areas" cover 12.9 percent of the timber harvesting land base of Block 6. The licensee has not harvested in any of these areas since 1995. I am aware of the BCFS district staff concern that continued avoidance of these areas could place undue pressure on other portions of the TFL land base, especially the remainder of Block 6. I am also aware, as discussed under *difference between AAC and actual harvest*, that over the past five years the licensee has not harvested the full AAC contribution which the chief forester attributed to Block 6 when approving Management Plan No. 7.

As part of its timber supply analysis, the licensee conducted a sensitivity analysis evaluating the timber supply impacts of excluding the "Haida declared protected areas". The licensee notes that these areas overlap its old-growth stewardship zone, so that the timber supply impacts are somewhat mitigated when their exclusion is modelled. The sensitivity analysis showed that if the areas no longer contributed to timber supply at all, the harvest level for Block 6 could be maintained for five years, after which it would decrease more steeply than in the base case to a long-term level that is 11 percent less than in the base case.

In this context, the licensee has recommended that a partition of 125 000 cubic metres be established for the "Haida declared protected areas". Public input was also received in support of such a partition.

Although I am aware of the widespread interest in the "Haida declared protected areas", I note that government has, with one exception, not yet chosen to make a land-use decision for these areas which would preclude timber harvesting activities. The exception has been the Province's exercise of authority under Part 13 of the *Forest Act* to make a "designated area" of the Duu Guusd area within the Queen Charlotte TSA, thereby enabling the chief forester to make a temporary AAC reduction for the TSA. Government has not, however, made a "designated area" of any of the "Haida declared protected areas" within TFL 39.

Until government decides to the contrary, I must assume that the "Haida declared protected areas" within TFL 39 will continue to contribute to timber supply in the long term, consistent with the resource values present and the productive capacity of the land base. Recognizing the importance of this issue, I strongly encourage the appropriate parties to actively pursue resolution of these areas so that the operational and timber supply uncertainties will be eliminated.

Being mindful that the licensee has voluntarily avoided harvesting in the "Haida declared protected areas" for several years, and currently has no plans to harvest in those areas, I have considered the advisability of establishing what is commonly referred to as a "partition" related to those areas. I will speak to the Block 6 partition question under Partitioned AAC and under *'Reasons for decision'*.

2) Tlell Watershed

Part of the Tlell watershed, which is a "Haida declared protected area", lies within TFL 39. A Local Resource Use Plan (LRUP) was initiated for the watershed but has not been completed.

The licensee participated in developing the Tlell LRUP and states that any harvesting in the watershed will be done in accordance with the LRUP.

In July, 1999 the Province accepted a proposal from the Island Community Stability Initiative (ICSI) that a community forest pilot agreement be entered into as a way of introducing co-management involving the Haida on Crown land in the Tlell watershed. The agreement would be designed to test a society governance model focused on achieving a sustainable balance among social, economic and environmental objectives. A more detailed proposal, including delineation of the area to which the community forest agreement would apply, is currently being developed.

With respect to the Tlell area and to the community forest pilot agreement proposal, I note that the implications, if any, to the management of TFL 39 are not yet clear. I anticipate that future AAC determinations will reflect any impacts on timber supply that arise if and when formal agreements and land-use designations are finalized.

3) other issues

I am aware that the Province is engaged in litigation with the Council of the Haida Nation over the replacement of TFL 39. As serious as this matter is, I do not believe it is relevant to the determination of an AAC for the TFL landbase.

With respect to Block 1, I am aware that in August of 2001, an interim protection measure was implemented for the lands identified in the draft Sliammon Agreement in Principle, which is yet to be ratified. This area includes approximately 100 hectares of timber harvesting land base on Block 1. I am satisfied that the small size of the area has negligible implications for timber supply for this determination, and make no adjustments in this regard.

I am also aware of the extensive technical submission by the Heiltsuk First Nation, expressing concern about many of the assumptions in the timber supply analysis and the licensee's management plan, with respect to Block 7. I have reviewed the licensee's response to this input. Where appropriate I have attempted to address this input within this rationale.

In consideration of the above points, I note that, as discussed under my guiding principles, it is inappropriate for me to speculate on the impacts on timber supply that would result from land-use decisions not yet been taken by government. As government reaches formal decisions in respect of treaty negotiations and other initiatives with First Nations, those decisions will be reflected in future timber supply analyses for the TFL.

- Central Coast Land and Resource Management Plan

In April 2001, the government announced its acceptance of the recommendations of phase one of the Central Coast Land and Resource Management Plan (CCLRMP). The Plan recommends protection of approximately 21 percent of the area in question, often referred to as the Great Bear Rainforest. Recommendations for an ecosystem-based approach to management are to be developed by an independent information team. In addition, the parties to the Plan have agreed to a 12- to 24-month moratorium on harvesting within so-called "option areas", which constitute 11.3 percent of the plan area. During that period it is expected that the information team will develop appropriate management recommendations for the areas.

Phase 2 of the CCLRMP is expected to involve development of further land base zoning and management objectives and strategies, recommendations for visual quality objectives in the

Special Management Zone visual quality zones, and clarity around the implementation of an ecosystem-based management regime.

I am aware of the following specifics in this context:

- Blocks 3, 5 and 7 of TFL 39 fall within the area covered by the CCLRMP. Many of the areas under the plan have been deferred from harvest for the past several years.
- The development of an ecosystem-based management regime may constrain the availability of timber on these blocks, over and above the impact of the licensee's Forest Project management regime.
- As discussed under ***visually sensitive areas***, portions of Block 3 are described in the CCLRMP as Special Management Zones for visual quality under the plan.
- The Phillips Estuary area in Block 5 is described as a candidate protection area. I note that it was a study area under the PAS and no harvesting has taken place since 1991. Because the vast majority of the area lies within the old-growth stewardship zone, it was already largely excluded from contributing to timber supply in the base case. A sensitivity analysis indicates that the additional exclusion of just under 100 hectares would reduce the long-term harvest level for Block 5 by approximately one percent.
- The Namu/Draney Lakes area, which covers a portion of Block 7, is described as a First Nations Lead Area. First Nations may advocate additional protection or access to the area, and it has been agreed that this area is deferred from harvest until April 2002. The licensee and other interested parties are expected to propose to government that the Heiltsuk First Nation and the BC government convene a co-design team to consider options for the area. The area also includes the Fougnar Bay watershed, which had been deferred from harvest since 1991 as a study area under the Province's Protected Areas Strategy (PAS).
- The Koeye watershed in Block 7 was also an approved study area under the PAS, and no harvesting has taken place in the watershed since 1991. The watershed is now a candidate protection area and is subject to a deferral on harvesting pending a government decision on the status of the area.
- The licensee notes in its management plan that a large portion of both the Namu/Draney Lakes, and the Koeye watersheds lie within its old-growth stewardship zone under the Forest Project.

No specific accounting for the management recommendations of the CCLRMP was made in the base case, and no areas were excluded in the derivation of the timber harvesting land base. I have considered the information about the elements of the CCLRMP, and the implications for timber supply on TFL 39. I am satisfied that the base case assumptions were appropriate because none of the candidate protection areas have been established, and no management regimes have been developed or implemented. While recognizing the significance of the outstanding uncertainty in the Mid Coast, in accordance with my guiding principles I will not speculate on government's long-term land-use decisions in this regard. For the purposes of this determination, I will assume that the areas in question will continue to be available for harvest in the long term. To the extent that new protected areas are created and a new ecosystem-based management regime is created over the next few years, the impacts will be assessed in the next timber supply analysis.

Irrespective of the CCLRMP considerations, I note that the uncertainty around operability of marginally economic stands on Block 7 compounds the question of timber supply on this block. I specifically note that the licensee has estimated that Block 7 contributes 130 000 cubic metres to the base case initial harvest level, which is significantly lower than the 195 000 cubic metres estimated in the previous timber supply analysis. Consideration of the dynamics of harvest flow on Block 7 has been an important component of my determination, as discussed under *'Reasons for decision'*.

- Vancouver Island Land Use Plan

The Vancouver Island Land Use Plan (VILUP) was announced by government in June 1994. The plan encompassed all of Vancouver Island, except Clayoquot Sound, and some adjacent islands, for a total area of 3 349 011 hectares. The plan categorized 13 percent of the area as proposed protected areas, 24 percent as enhanced management zones, 31 percent as general management zones, and 7 percent as special management zones. The remainder is comprised of agriculture, settlement and private land areas.

Since 1994, a number of implementation actions have been taken including further clarifications of the plan's intent. The Vancouver Island Summary Land Use Plan, accepted by government in 2000, further clarified direction for resource management zones and other features of the plan. As mentioned earlier, the VILUP Order specifying binding land-use objectives was promulgated by government in December 2000. The key objectives of the VILUP Order that affect timber supply relate to requirements for green-up, cutblock size, visual resources and landscape unit planning.

Blocks 2 and 4 of TFL 39 are within the area covered by the VILUP Order. As discussed under *protected areas*, all protected areas recommended by the VILUP and subsequently designated through order-in-council were excluded in the derivation of the timber harvesting land base in the analysis.

The Johnstone Strait, Tsitika River and Schoen-Strathcona Special Management Zones (SMZs) overlap Block 2 of TFL 39. The Tsitika River and Schoen-Strathcona SMZs are assigned high biodiversity emphasis, and the Johnstone Strait SMZ is assigned intermediate biodiversity emphasis. These SMZs fall within the licensee's old-growth or habitat stewardship zones under the Forest Project, and were modelled with specific constraints designed to emulate management requirements for each stewardship zone. BCFS staff indicate that the constraints modelled in the base case for these areas adequately reflect the intent of the VILUP Order.

The Holberg and Keogh-Cluxewe Landscape Units in Block 4, and the Adam & Eve and Salmon Landscape Units in Block 2 are designated as Enhanced Management Zones under the VILUP Order. The areas are assigned a low biodiversity emphasis and fall within the licensee's timber stewardship zone. Again, for these areas, the constraints modelled in the base case are expected to meet the requirements of the VILUP Order.

The remaining portions of TFL 39 covered by the VILUP Order are classified as General Management Zones. The constraints modelled in the base case for these areas meet or exceed the requirements outlined in the Order.

BCFS staff indicate that the majority of the VILUP Order strategies have been implemented in the portion of TFL 39 covered by the Order. For the most part, the base case assumptions concur with current management and the provisions of the Order. As noted under *landscape level biodiversity*, I am accounting in this determination for the additional impact of meeting old seral

requirements in the Salmon and Sayward Landscape Units, as these requirements were not adequately modelled in the base case. With that exception, I am satisfied that the assumptions in the base case were consistent with the VILUP Order.

- Stillwater Pilot Project Regulation

In April 2001, Cabinet approved by order-in-council a regulation identifying Block 1 of TFL 39 as a Forest Practices Code pilot project. The project, known as the Stillwater Timberlands Pilot Project, will be in effect for 10 years. Under the regulation, a forest stewardship plan must be developed. When it is approved, for that area it will supersede portions of the Management Plan and will obviate several of the operational plans otherwise required under the Forest Practices Code.

The approval of the regulation resulted in some minor variance from the management regime assumed in the timber supply analysis. Under the regulation, stewardship zone areas were slightly modified, and a recreation and tourism zone was introduced. The licensee estimates that the old-growth zones declared under the regulation will further reduce the size of the timber harvesting land base for Block 1 by 3.5 percent. As a result, timber supply was slightly overestimated in the base case. A sensitivity analysis in which the size of the timber harvesting land base for Block 1 was reduced by this amount indicates that long-term timber supply for the TFL would be reduced by approximately one percent on this account.

The forest stewardship plan is anticipated to be advertised for public review and comment late in the fall of 2001, with final approval of the plan expected to occur in early 2002.

I have reviewed the information regarding the Stillwater Pilot Project and conclude as follows. I am aware that the forest stewardship plan has not yet been approved, and therefore the requirements of the Stillwater Regulation are not yet in effect for Block 1. However, the management considerations arising from the regulation, such as the placement of the stewardship zones, are guiding current practice on Block 1 and the anticipated requirements are incorporated in the management plan for the TFL. As a result, I am satisfied that it is appropriate to take into account the timber supply implications of this management regime. I believe that the long-term timber supply has been overestimated for TFL 39 by an amount slightly less than 1 percent, and I will discuss my considerations of this further under *'Reasons for decision'*.

- Enhanced Forest Management Pilot Project

Portions of Block 2 are the subject of an Enhanced Forest Management Pilot Project (EFMPP). The project was initiated to investigate means to mitigate timber supply impacts, such as arise from meeting adjacency objectives. Since the licensee's initiation of the Forest Project and the implementation of variable retention, research under the EFMPP has focused on the stewardship and timber supply implications of using variable retention.

Results arising from research under the EFMPP may assist with refining the data used in future timber supply analyses to reflect variable retention and other aspects of operational practice.

As any relevant information becomes available, it will be reflected in future analyses for TFL 39. I am satisfied that there are no significant implications for this determination.

(b) the short and long-term implications to British Columbia of alternative rates of timber harvesting from the area,

Alternative rates of harvest

- harvest flow/socio-economic implications

The nature of the transition from harvesting old-growth forests to harvesting second-growth forests is a major consideration in determining AACs in many parts of the province. In the short term, the presence of large timber volumes in older forests often permits harvesting above long-term levels without jeopardizing future timber supply. In keeping with the objectives of good forest stewardship, AACs in British Columbia have been and continue to be determined to ensure that current and medium-term harvest levels will be compatible with a smooth transition toward the usually (but not always) lower long-term harvest level. Thus, timber supply should remain sufficiently stable so that there will be no inordinately adverse impacts on current or future generations. To achieve this, the AAC determined must not be so high as to cause later disruptive shortfalls in supply nor so low as to cause immediate social and economic impacts that are not required to maintain forest productivity and future harvest stability.

The licensee for TFL 39 indicates in its management plan that its strategy is to gradually adjust the harvest level towards the estimated long term level. As a result, the licensee chose a harvest schedule in which the harvest level declines gradually, beginning with the choice of an initial harvest level that is 2 percent below the current AAC for the TFL. The long-term harvest level is 9 percent lower than the initial harvest level.

The licensee did not model alternative harvest flows. A non-declining harvest flow would be possible at an initial harvest level much lower than the current AAC.

I note that the lack of alternative harvest flows make it more difficult to project some of the harvest dynamics for TFL 39, such as whether the current AAC could be maintained for a period of time without unacceptable future disruptions to timber supply. I find it likely that the current AAC on TFL 39 could in fact be maintained in the short term, with somewhat greater, but still acceptable, decadal declines to the mid-term level. However, in crafting its most recent management plans, the licensee has consistently recommended gradually reducing the AAC for this TFL towards the long-term harvest level. In view of the licensee's stated objectives in its management plan, I find that this strategy is acceptable, and therefore I accept the choice of the initial harvest level in the base case.

- difference between AAC and actual harvest level

The current AAC for TFL 39 is 3 740 000 cubic metres. BCFS regional staff note that the licensee did not meet its minimum harvest requirement for the 1996-2000 cut control period, having harvested 87.5 percent of its AAC for that period. The total undercut over the five-year period was 2 211 514 cubic metres.

I am aware that no decision has been made concerning whether the licensee will be allowed to harvest some or all of the undercut volume in the period from 2001 through 2005. I am also aware that government may decide to dispose of some or all of the undercut volume to third parties over the next five years or longer. If the short-term harvest level is temporarily increased to facilitate harvesting the undercut volume, that harvest will be administered over and above the new AAC.

I note that the TFL growing stock volume totals approximately 150 million cubic metres at this time. If indeed some 2 million cubic metres is harvested over and above the new AAC, the inventory of mature timber would be depleted faster than indicated in the base case analysis. The decline to the long-term harvest level would be more rapid than modelled.

Although it is currently impossible to quantify this matter, to the extent that undercut volume is harvested over the next several years, it will be reflected in the inventory data prepared for the next timber supply analysis, and the resulting decrease in timber supply will be accounted for in the next AAC determination.

Finally, with respect to differences between the previous AAC and actual harvest levels, I am aware that harvesting on Blocks 2, 6 and 7 has been lower than the contributions from these blocks that were anticipated in Management Plan No. 7.

- community dependence on the forest industry

The licensee estimates in Management Plan No. 8 that more than 4500 direct jobs in timber harvesting, silviculture, transport, processing and government are dependent upon the volume harvested on TFL 39.

Approximately 1500 jobs in harvesting and forestry are located in smaller communities including Sandspit, Queen Charlotte City, Skidegate, Port Clements, Masset (all on the Queen Charlotte Islands), Port Hardy, Port McNeill, Sayward and Campbell River (on Vancouver Island), and on the Sunshine Coast. The majority of processing employment is associated with mills in the Lower Mainland and on Vancouver Island.

I have reviewed the information regarding the community dependence on the forest industry and I am mindful that many communities are dependent on the volume harvested from TFL 39 both directly and indirectly for employment as well as tax revenues. I am aware that the harvest from TFL 39 contributes significantly to both provincial and community economies, and I have considered this information in my determination.

(c) the nature, production capabilities and timber requirements of established and proposed timber processing facilities,

Timber processing facilities

Timber harvested from TFL 39 supplies mills on Vancouver Island and in the Lower Mainland. Forty-seven percent of the volume harvested in 1999 consisted of sawlogs milled through company sawmills, and a further 25 percent consisted of pulp quality logs which were processed at Norske Canada's mill in Powell River. External sales of the remaining 28 percent were offset by the purchase of logs better suited to the company's mill requirements.

As discussed under *deciduous forest types*, the licensee also operates mill facilities that process red alder.

Public input was received requesting that more effort be made to ensure timber harvested from the TFL—in particular Blocks 6 and 7—be processed by mills in local communities in the Queen Charlotte Islands and on the Mid Coast.

I have considered this input, and the licensee's response to the input, in this determination.

(d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia,

Economic and social objectives

- *Minister's letter and memorandum*

The Minister has expressed the economic and social objectives of the Crown for the province in two documents to the chief forester—a letter dated July 28, 1994, (attached as Appendix 3) and a memorandum dated February 26, 1996, (attached as Appendix 4). These economic and social objectives are an important consideration in my determination of an AAC for TFL 39.

This letter and memorandum include objectives for forest stewardship, a stable timber supply, and allowance of time for communities to adjust to harvest-level changes in a managed transition from old-growth to second-growth forests, so as to provide for community stability.

The Minister stated in his letter of July 28, 1994, that "any decreases in allowable cut at this time should be no larger than are necessary to avoid compromising long-run sustainability." He placed particular emphasis on the importance of long-term community stability and the continued availability of good forest jobs. To this end he asked that the chief forester consider the potential impacts on timber supply of commercial thinning and harvesting in previously uneconomical areas. To encourage this the Minister suggested consideration of partitioned AACs.

I have considered the contents of the letter and memorandum in my determination of an AAC for TFL 39. I conclude that the opportunities for commercial thinning are currently limited on the TFL. In addition, as discussed earlier under *economic and physical operability*, the licensee assumed marginally economic areas would contribute to timber supply, and there is some uncertainty around these assumptions for Block 7. I have considered the appropriateness of establishing a partition to these areas and will discuss this further under *Partitioned AAC*.

The Minister's memorandum addressed the effects of visual resource management on timber supply. In it, the Minister asked that pre-Code constraints applied to timber supply in order to meet VQOs be re-examined when determining AACs in order to ensure they do not unreasonably restrict timber supply. Having reviewed the information regarding visual resources, I am satisfied that the constraints applied in the analysis were an appropriate reflection of management considerations necessary to maintain the quality of the visual resource.

- *local objectives*

The Minister's letter of July 28, 1994, suggests that the chief forester should consider important social and economic objectives that may be derived from the public input in the timber supply review where these are consistent with government's broader objectives.

The licensee provided opportunity for public review at a number of stages in the process for Management Plan No. 8, including the draft statement of management objectives, options and procedures (SMOOP) and the draft management plan through advertisement in local and regional newspapers, conducting open houses in various communities, and making the documents available for public viewing from various offices. I have reviewed the process used by the licensee to solicit public input and I am satisfied that it has met its obligations satisfactorily.

A significant amount of public comment was received, including input from community residents, communities and regional districts, community advisory groups and First Nations. Where appropriate, I have attempted in the appropriate sections of this rationale to respond briefly to the comments received. Consideration of the public input has been an important component of my AAC determination. In some cases, that input related to matters that fall outside my mandate in making an AAC determination under Section 8 of the *Forest Act*.

For instance, some of the public input identified important local objectives and concerns pertaining to the manner in which social and economic benefits are distributed from timber harvested on TFL 39. Some people argued that some of the TFL's timber supply should be dedicated to local communities, and that local secondary manufacturing industries should be better supported. Specific public input from the village of Port Clements expressed concern about the lack of local processing facilities and overall community sustainability. The Heiltsuk First Nation expressed a desire to increase its participation in the forest sector and to gain more economic involvement with the timber resources of Block 7. Some of the concerns also related to First Nations land claims settlements. As significant as these issues may be, none of them lie within the authority granted me in making AAC determinations under section 8 of the *Forest Act*.

Other public input expressed the opinion that the AAC should not be increased in any area. I am aware that the licensee has projected an initial harvest level for Block 1 that is greater than the level of the previously estimated contribution by that block, and that the overall harvest forecast for Block 1 is an increasing harvest flow. As described under *Timber Supply Analysis*, I have reviewed the assumptions upon which this harvest flow is predicated and am satisfied that the information, subject to the discussion in this rationale, represents a suitable basis for assessing available timber supply for this determination.

Public input requested that the Koeye River watershed should be a protected wildlife and fish reserve, but not a park. In accordance with my guiding principles, I will not speculate on what government may decide in response to this suggestion, or any other suggestion to prohibit harvesting on a given area. Should government choose to establish a protected area, or establish specific harvesting constraints in the Koeye watershed, that will be taken into account in a future AAC determination.

Partitioned AAC

The Minister's letter recommends consideration of a partition to specific types of stands if necessary to promote harvesting of such stands. In the following sections I will summarize my conclusions in respect of four possible partitions:

- *deciduous partition*

The previous AAC determination for TFL 39 included an attribution of 40 000 cubic metres per year to deciduous stands. As discussed under *deciduous forest types* earlier in this document, deciduous-leading forest types account for less than one percent of the assumed timber harvesting land base. Over the past five years, deciduous species have accounted for a similar percentage of the harvested volume. I believe that the licensee will, over time, routinely harvest deciduous-leading types in sufficient quantity that a partition is no longer necessary to promote such harvesting. I also conclude that the absence of a deciduous partition will no longer risk undue harvesting pressure on the coniferous stands in the TFL.

- *"Haida declared protected areas"*

As identified and discussed earlier in this rationale, the "Haida declared protected areas" cover 12.9 percent of the assumed timber harvesting land base of Block 6. Although these areas have no official status, the licensee has avoided them for the past six years. A sensitivity analysis indicated that if these areas no longer contributed to timber supply, the short-term contribution of Block 6 would be about 11 percent, or 125 000 cubic metres, less than is indicated in the base case. The licensee has recommended that 125 000 cubic metres of the new AAC be partitioned to the "Haida declared protected areas".

Although a partition of this nature will not obligate the licensee to harvest this amount in the 'Haida declared protected areas", and will not of itself restrain the licensee from harvesting its full AAC entitlement elsewhere in the TFL, I conclude that it is reasonable to attribute (i.e., to partition) 125 000 cubic metres of the new AAC to these areas. I will discuss this further under 'Reasons for decision'.

- *marginally economic stands*

The third potential for partitioning the new AAC relates to marginally economic stands which make up 18 percent of the timber harvesting land base in Block 7 in the Mid Coast Forest District. If these stands were instead classified as unharvestable, a sensitivity analysis indicates that the initial harvest level modelled for Block 7 in the base case could be continued for five decades, but the mid-to long-term timber supply from that Block would be about 17 percent lower than in the base case. I note that this would have an impact of less than one percent on the overall TFL timber supply. I am mindful that there has been little harvesting of these stands, which would indicate that their economic operability is questionable. This uncertainty is compounded by the current harvest moratorium on at least 14 percent of the land base on Block 7, pending decisions under the CCLRMP.

Although I am certainly concerned about this element of the timber supply, I believe it is an issue which can be better dealt with in the next AAC determination. By then I anticipate that the CCLRMP process will have brought much greater clarity to the status of Block 7 generally, and I anticipate being able to fully consider the level of harvesting that has occurred in the marginally economic stands in the interval.

- *blocks*

A final consideration of possible AAC partitions relates to the contribution that each block of the TFL appears to make to the AAC of the entire TFL. I have received public input recommending that I specify a partition for each block, as a way of fostering improved community stability.

TFL 39 is unique in the extent to which its landbase is scattered across a wide geographic area. Although I appreciate the community concerns about how harvesting of the AAC may be distributed across the blocks that comprise the TFL, I believe it is important to note that Section 8 of the *Forest Act* charges me with determining an AAC for the TFL as a whole, not for individual blocks. Indeed the essence of a tree farm licence is that it should be managed as a whole over the long term, including shifting harvest patterns to maximize the stream of environmental, economic, and social benefits.

Having said that, I agree that social stability is a significant element in managing TFL 39, as it is with every management unit in the province. In its recently approved management plan the

licensee included essentially the same block-by-block data as shown in the table under *Timber Supply Analysis* in this document, and said that "Weyerhaeuser will continue the practice of managing TFL 39 on a Block basis in response to local concerns including employment opportunities". In approving the management plan, I have held the licensee to that commitment. With that in mind, I do not believe there is anything to be gained by specifying block-specific attributions as part of this determination.

(e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.

Abnormal infestations and salvage

- forest health concerns

Dwarf mistletoe is a disease affecting stands regenerating in areas with high levels of infestation in the adjacent old-growth stands. District staff are concerned that the increased edge effects of variable retention may increase the incidence and magnitude of infestation in second-growth stands on the TFL.

Similarly, due to the increased edge effect with variable retention, retention areas may be more subject to windthrow damage, a concern raised in the public input on draft Management Plan No. 8.

The licensee acknowledges the concerns related to forest health implications of variable retention, and Management Plan No. 8 includes strategies to mitigate risk, including removal of groups of trees most severely infected by dwarf mistletoe, and planting non-susceptible species in certain areas. The licensee also acknowledges that the management of windthrow hazard is a significant challenge, and has committed to developing a windthrow monitoring and mitigation program.

I have considered the information about forest health concerns on TFL 39. I note that as variable retention continues to be implemented, the licensee will be increasingly able to more precisely assess the implications for forest health and timber supply. I am aware of the licensee's commitment to continue monitoring the effects of variable retention on disease infestations and wind firmness, and I look forward to having new data for use in the next timber supply review.

- unsalvaged losses and salvage program

Unsalvaged losses are timber volumes destroyed or damaged by agents such as fire and disease that are not recovered through salvage operations.

The licensee reviewed past records of fire losses, and derived an estimate of 8000 cubic metres per year. Timber losses on the TFL from diseases and insects were estimated to be minor. Discussions with operational engineers indicated that unsalvaged losses from windthrow were variable across the TFL, ranging from less than 0.5 percent to 1 percent of the total harvested volume. As mentioned under *forest health issues*, district staff are concerned that the use of variable retention may lead to increased windthrow. However the licensee notes its commitment to salvage the majority of any timber blown down on the timber harvesting land base.

For the analysis, the licensee assumed unsalvaged losses resulting from natural agents equalled one percent of the harvest level for TFL 39. A total of 36 600 cubic metres per year were

subtracted from the harvest forecast for the entire forecast period. The base case projection is net of this provision.

I have reviewed the information about unsalvaged losses and the assumptions in the analysis. I am satisfied that the best available information was used in the timber supply analysis, and make no adjustments for this determination.

Reasons for decision

I have considered the information discussed throughout this document, and I have reasoned as follows.

For the reasons stated in 'Timber Supply Analysis' and from reviewing the considerations as recorded above, I accept that the licensee's timber supply analysis base case forms an appropriate basis from which to assess timber supply for this AAC determination.

The licensee's base case projected an initial harvest level of 3 660 000 cubic metres per year, which represents a 2.1 percent reduction from the current AAC for the TFL. I note that the licensee has proposed a harvest level of 3 680 000 cubic metres per year. The proposed harvest level differs from the base case projection in that Block 7 is proposed to contribute 150 000 cubic metres per year, 20 000 cubic metres per year more than shown in the base case. The licensee has proposed this higher level in order to effect a slower transition from the contribution of 195 000 cubic metres per year specified in the previous AAC determination.

In determining this AAC, I have identified factors which, considered separately, indicate that the timber supply may be either greater or less than that projected in the base case. Generally some of these factors can be quantified and their impacts assessed with some reliability. Others may influence timber supply by adding an element of risk or uncertainty to the decision but cannot be reliably quantified at this time. These latter factors are accounted for in determinations in more general terms.

In this rationale, I have identified several factors for which I believe the base case assumptions differ from current operational practices or conditions. These factors are summarized below.

I believe the treatment of one factor has underestimated timber supply in the base case in the mid to long term, as follows:

- *variable retention* – I accept that the assumptions in the analysis of full implementation of variable retention at the start of the analysis horizon, and therefore of its full influence on regenerated stand yields as of that time, has resulted in a slight underestimation of available timber supply in the mid term;

I believe that the treatment of other factors has overestimated timber supply in the base case projection, as follows:

- *regeneration delay* – as a result of a slight underestimation of regeneration delay in the timber supply analysis, I conclude that timber supply has been very slightly overestimated in the mid to long term across the entire TFL;

- *protected areas* – I conclude that it is appropriate to take into account the exclusion of the area encompassed by the recently established Inland Lake Park, which results in a reduction of slightly over 1 percent in the timber supply after 50 years;

- *identified wildlife* – I believe that the eventual establishment of wildlife habitat areas and implementation of general wildlife measures will result in a reduction of up to 1 percent in timber supply compared to the base case;

- *Stillwater Pilot Project* – I anticipate that full implementation of the management requirements outlined in the Stillwater Pilot Project Regulation for Block 1 will result in a reduction of less than 1 percent in long-term timber supply for the TFL as a whole;

- *site productivity* – I believe that site productivity on Block 6 may have been overestimated, causing overall TFL timber supply to be overestimated by perhaps 2 percent in the long term;

- *use of select seed* – I conclude that the assumption in the base case for the use of select seed, which resulted in adjustments to managed stand volumes and minimum harvestable ages, slightly overestimates available timber supply because the second generation genetic gains were applied approximately 10 years earlier than will be possible operationally.

BCFS staff have reviewed the timber supply implications of the assumptions around the early use of select seed and the early implementation of the effects of variable retention, and indicate that the cumulative impact of correcting these two assumptions is close to nil relative to base case projections. As a result, I accept that there are no risks to timber supply posed by the slight discrepancies in these two assumptions.

Review of the remaining factors described above indicates that the factors acting to decrease short-term timber supply for the TFL are small, less than one percent. Adjusting the assumptions that are quantifiable and that act to decrease mid- to long-term timber supply, would reduce the supply by perhaps two percent, not including adjusting the site productivity estimates on Block 6. As noted under that section of the rationale, I request that the licensee collect the necessary data to refine estimates for use in the next timber supply analysis.

However, I am mindful of several other considerations which are significant in this decision:

- In the long term, the timber supply from TFL 39 is forecast to decline to a level approximately 9 percent less than the base case initial harvest level. At this time, I do not foresee any factors which would mitigate this decline over time. In fact, I am aware of several uncertainties which, once resolved, may result in a greater rate of decline, or a decline to a lower mid- or long-term harvest level, than shown in the base case harvest forecast.

- There is the issue of the operability of the marginally economic stands, particularly on Block 7. The licensee asserts that the stands will be harvestable over time, but it is difficult to predict future markets with certainty. Certainly, these stands do not appear to be harvestable with current market conditions.

- There are uncertainties around future land use on portions of Blocks 5, 6 and 7. Harvesting continues to be avoided on the portions of Block 6 that overlap the "Haida declared protected areas", and clarity around management will likely not possible until the completion of a land-use planning process for the Queen Charlotte Islands. Up to 13 percent of the timber harvesting land base on Block 6 is currently deferred from harvest on this account. Analysis indicates that if these areas were excluded from contributing to timber supply as a result of a land-use decision, it would be immediately reduced by 11 percent.

- Portions of Blocks 3, 5 and 7 fall within the area under the CCLRMP. Although the management regime has yet to be defined, Block 3 may be subject to increased constraints in

order to meet special visual quality objectives. Portions of Blocks 5 and 7 are currently described as candidate protection areas, option areas and First Nations Lead Areas, and a more constraining ecosystem-based management regime is tentatively anticipated for some areas. The future status and management for these areas will be determined through Phase 2 of the CCLRMP process, and is likely to severely constraint available timber supply on these blocks. Sensitivity analysis to evaluate the impacts to Block 7 if the candidate protection areas are excluded from contributing to timber supply showed an immediate 5 percent impact to the harvest level on Block 7, equivalent to less than 1 percent for the TFL as a whole.

- No formal land-use decisions have been made in either the Queen Charlotte Islands, or on the Central Coast, which would allow me to exclude any areas on TFL 39 from contributing to timber supply, other than those already netted out in the base case analysis. I expect that as land-use planning is completed for the Queen Charlotte Islands, there will be greater clarity regarding the status of the portions of Block 6 currently deferred from harvest.

- In light of the uncertainties about future timber supply on TFL 39, in particular on Blocks 6 and 7, I do not agree with the licensee's proposal that I assume a higher contribution from Block 7 than was modelled in the base case.

- One significant factor which was not addressed in any of the modelling is the possibility that, over the next five to ten years, up to 2 million cubic metres of 'undercut' volume could be harvested on the TFL over and above the new AAC. That is because the licensee failed to harvest its full AAC over the past five years, and therefore the Minister of Forests or other ministry official may decide to dispose of the 'undercut' volume to third parties. Such harvesting would deplete the existing merchantable inventory somewhat faster than modelled in the base case. This in turn would trigger a faster decline to the long-term harvest level than indicated in the base case.

I note, however, that the 2 million cubic metres in question would amount to about 1.3 percent of the existing growing stock volume, which is not a dramatic percentage. I am content to track this matter and to factor the actual experience into the next AAC determination.

In spite of the uncertainties I have mentioned, I specifically note the projected 9-percent drop in timber supply is a small decline relative to the reductions anticipated in many other management units in the province. I believe that it will be possible to manage the transition from the most recent AAC to the expected long-term harvest level through a series of small reductions in AAC that will avoid unnecessary disruption to economic and social benefits.

Determination

I have considered and reviewed all the factors documented above, including the risks and uncertainties of the information provided. It is my determination that a timber harvest level that accommodates objectives for all forest resources during the next five years, that reflects current management practices as well as the socio-economic objectives of the Crown, can be best achieved on TFL 39 by establishing an AAC of 3 660 000 cubic metres. This represents a reduction of 2.1 percent from the current AAC.

Having considered the information about the harvest of deciduous stands, I am satisfied that a partition to deciduous stands is not warranted in this determination. I do, however, conclude that it is appropriate to attribute 125 000 cubic metres of the AAC to the "Haida declared protected

areas". I encourage the licensee and ministry staff to consider this attribution when they are doing operational planning for the rest of the TFL, especially for the balance of Block 6.

This determination is effective November 21, 2001 and will remain in effect until a new AAC is determined, which must take place within five years of the date of this determination.

If additional significant new information is made available to me, or major changes occur in the management assumptions upon which I have predicated this decision, then I am prepared to revisit this determination sooner than the five years required by legislation. I am particularly mindful of the efforts being made to complete the Central Coast Land and Resource Management Plan and to resolve the First Nations issues I have discussed in this rationale. I will remain attuned to progress with those initiatives. If government should choose to make land-use decisions that prohibit harvesting on any of TFL 39, I will then consider a temporary or permanent reduction to this AAC at that time.

Implementation

In the period following this decision and leading to the next AAC determination, I request that the licensee:

- "ground truth" the economic operability assumptions for Block 7, particularly in relation to areas described as marginally economic or suitable for helicopter harvesting;
- better quantify the retention levels in riparian management zones;
- collect the necessary data through the TEM project to allow for more precise estimates of site productivity;
- finalize stewardship zone boundaries, and better quantify levels of retention within each stewardship zone by block;
- update the recreation inventory for Block 1;
- accumulate data on the volume harvested in deciduous-leading stands for use in the next timber supply analysis; and
- design and implement a windthrow monitoring and mitigation strategy.

Ken Baker

Ken Baker
Deputy Chief Forester

November 21, 2001

Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 1996, reads as follows:

Allowable annual cut

8. (1) The chief forester must determine an allowable annual cut at least once every 5 years after the date of the last determination, for

(a) the Crown land in each timber supply area, excluding tree farm licence areas, community forest areas and woodlot licence areas, and

(b) each tree farm licence area.

(2) If the minister

(a) makes an order under section 7 (b) respecting a timber supply area, or

(b) amends or enters into a tree farm licence to accomplish the result set out under section 39 (1) (a) to (d),

the chief forester must make an allowable annual cut determination under subsection (1) for the timber supply area or tree farm licence area

(c) within 5 years after the order under paragraph (a) or the amendment or entering into under paragraph (b), and

(d) after the determination under paragraph (c), at least once every 5 years after the date of the last determination.

(3) If

(a) the allowable annual cut for the tree farm licence area is reduced under section 9 (3), and

(b) the chief forester subsequently determines, under subsection (1) of this section, the allowable annual cut for the tree farm licence area,

the chief forester must determine an allowable annual cut at least once every 5 years from the date the allowable annual cut under subsection (1) of this section is effective under section 9 (6).

(4) If the allowable annual cut for the tree farm licence area is reduced under section 9 (3), the chief forester is not required to make the determination under subsection (1) of this section at the times set out in subsection (1) or (2) (c) or (d), but must make that determination within one year after the chief forester determines that the holder is in compliance with section 9 (2).

(5) In determining an allowable annual cut under subsection (1) the chief forester may specify portions of the allowable annual cut attributable to

(a) different types of timber and terrain in different parts of Crown land within a timber supply area or tree farm licence area, and

(b) different types of timber and terrain in different parts of private land within a tree farm licence area.

(c) [Repealed 1999-10-1.]

(6) The regional manager or district manager must determine an allowable annual cut for each woodlot licence area, according to the licence.

(7) The regional manager or the regional manager's designate must determine a rate of timber harvesting for each community forest agreement area, in accordance with

(a) the community forest agreement, and

(b) any directions of the chief forester.

(8) In determining an allowable annual cut under subsection (1) the chief forester, despite anything to the contrary in an agreement listed in section 12, must consider

(a) the rate of timber production that may be sustained on the area, taking into account

(i) the composition of the forest and its expected rate of growth on the area,

(ii) the expected time that it will take the forest to become re-established on the area following denudation,

(iii) silviculture treatments to be applied to the area,

(iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area,

(v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production, and

(vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber,

(b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area,

(c) the nature, production capabilities and timber requirements of established and proposed timber processing facilities,

(d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia, and

(e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.

Appendix 2: Section 4 of the *Ministry of Forests Act*

Section 4 of the *Ministry of Forests Act* (consolidated 1988) reads as follows:

Purposes and functions of ministry

4. The purposes and functions of the ministry are, under the direction of the minister, to

(a) encourage maximum productivity of the forest and range resources in British Columbia;

(b) manage, protect and conserve the forest and range resources of the government, having regard to the immediate and long term economic and social benefits they may confer on British Columbia;

(c) plan the use of the forest and range resources of the government, so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are co-ordinated and integrated, in consultation and co-operation with other ministries and agencies of the government and with the private sector;

(d) encourage a vigorous, efficient and world competitive timber processing industry in British Columbia; and

(e) assert the financial interest of the government in its forest and range resources in a systematic and equitable manner.

Documents attached:

Appendix 3: Minister of Forests' letter of July 28, 1994

Appendix 4: Minister of Forests' memo of February 26, 1996

File: 10100-01

JUL 28 1994

John Cuthbert
Chief Forester
Ministry of Forests
595 Pandora Avenue
Victoria, British Columbia
V8W 3E7

Dear John Cuthbert:

Re: Economic and Social Objectives of the Crown

The *Forest Act* gives you the clear responsibility for determining Allowable Annual Cuts, decisions with far-reaching implications for the province's economy. The *Forest Act* provides that you consider the social and economic objectives of the Crown, as expressed by me, in making these determinations. The purpose of this letter is to provide this information to you.

The social and economic objectives expressed below should be considered in conjunction with environmental considerations as reflected in the Forest Practices Code, which requires recognition and better protection of non-timber values such as biodiversity, wildlife and water quality.

The government's general social and economic objectives for the forest sector are made clear in the goals of the Forest Renewal Program. In relation to the Allowable Annual Cut determinations you must make, I would emphasize the particular importance the government attaches to the continued availability of good forest jobs and to the long-term stability of communities that rely on forests.

Through the Forest Renewal Plan, the government is taking the steps necessary to facilitate the transition to more value-based management in the forest and the forest sector. We feel that adjustment costs should be minimized wherever possible, and to this end, any decreases in allowable cut at this time should be no larger than are necessary to avoid compromising long-run sustainability.

.../2

Province of British Columbia
Minister of Forests
Parliament Buildings
Victoria, British Columbia
V8V 1X4

In addition to the provincial perspective, you should also consider important local social and economic objectives that may be derived from the public input on the Timber Supply Review discussion papers where these are consistent with the government's broader objectives.

Finally, I would note that improving economic conditions may make it possible to harvest timber which has typically not been used in the past. For example, use of wood from commercial thinnings and previously uneconomic areas may assist in maintaining harvests without violating forest practices constraints. I urge you to consider all available vehicles, such as partitioned cuts, which could provide the forest industry with the opportunity and incentive to demonstrate their ability to utilize such timber resources.

Yours truly,

Andrew Petter
Minister

Province of British Columbia
OFFICE OF THE MINISTER

Ministry of Forests

MEMORANDUM

File: 16290-01

February 26, 1996

To: Larry Pedersen
Chief Forester

From: The Honourable Andrew Petter
Minister of Forests

Re: **The Crown's Economic And Social Objectives Regarding Visual Resources**

Further to my letter of July 29, 1994, to your predecessor, wherein I expressed the economic and social objectives of the Crown in accordance with Section 7 of the *Forest Act*, I would like to elaborate upon these objectives as they relate to visual resources.

British Columbia's scenic landscapes are a part of its heritage and a resource base underlying much of its tourism industry. They also provide timber supplies that are of significant economic and social importance to forest industry dependent communities.

Accordingly, one of the Crown's objectives is to ensure an appropriate balance within timber supply areas and tree farm licence areas between protecting visual resources and minimizing the impact of such protection measures on timber supplies.

As you know, I have directed that the policy on management of scenic landscapes should be modified in light of the beneficial effects of the Forest Practices Code. In general, the new policy should ensure that establishment and administration of visual quality objectives is less restrictive on timber harvesting. This change is possible because alternative harvesting approaches as well as overall improvement in forest practices will result in reduced detrimental impacts on visually sensitive areas. Also, I anticipate that the Forest Practices Code will lead to a greater public awareness that forest harvesting is being conducted in a responsible, environmentally sound manner, and therefore to a decreased public reaction to its visible effects on the landscape. In relation to the Allowable Annual Cuts determinations that you make, please consider the effects that the new policy will have in each Timber Supply Area and Tree Farm Licence.

.../2

In keeping with my earlier letter, I would re-emphasize the Crown's objectives to ensure community stability and minimize adjustment costs as the forest sector moves to more value-based management. I believe that the appropriate balance between timber and visual resources will be achieved if decisions are made consistent with the ministry's February 1996 report *The Forest Practices Code: Timber Supply Analysis*.

Finally, in my previous letter I had asked that local economic and social objectives be considered. Please ensure that local views on the balance between timber and visual resources are taken into account within the context of government's broader objectives.

Andrew Petter
Minister of Forests